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Dominion Dental Journal

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Original Communications

A MATRIX FOR THE INSERTION OF GOLD IN THE ANTERIOR TEETH.

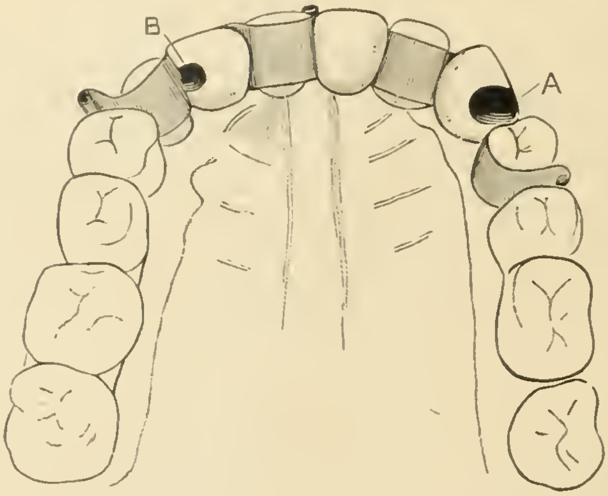
BY GEO. GOW, D.D.S., TORONTO.

Read before Odontological Club, Toronto.

The matrix as an aid in restoring contours in the posterior teeth, has become indispensable to the operators of the present day, and why should the usefulness of the principle be overlooked in its application to the successful management of interproximal cavities, and corner restorations in the anterior teeth?

Its advantages are manifest. It restores a missing wall in many cases, and gives the operator something additional to the pulpal wall to build against. The general conformity of the matrix to the shape of the tooth serves as a guide to the contour of the filling to be inserted. It facilitates the condensation of certain points in the filling, often difficult of access, *e.g.,* in an interproxmial filling extending from the labial surface through to the lingual surface; that portion of the filling in the incisal region is often only sufficiently condensed with great difficulty, but where the matrix is employed it is rendered easy of access, and the required force may be applied without fear of dislodgment of the filling. It facilitates the finishing of the filling to a marked degree, inasmuch as the gold against the matrix is smooth, and there is less surplus. It enables the operator to secure a perfectly condensed contact point. Where teeth are loose or tender, whether caused by over-rapid separation or naturally so; it will be found very useful as a means of staying them. In the hands of a careful and thorough operator it will be readily appreciated that operations may be more accurately and rapidly performed. Oftentimes, in emergency cases, fillings may be inserted without separation; but it is not advisable.

Briefly, the matrix consists of the intertwining of a thin ribbon of german silver, gauge 38 or thereabouts, around and under, or over, certain teeth adjacent on either side to the one being filled. If the material be too thick, a proper adaptation is rendered impossible and failure will result. A strip being selected, varying in width according to the size of the cavity, and from one to three inches in length, one end is curled tightly upon itself so as to form a shoulder. Its application is a simple matter, the strip being forced between the points of contact of the two teeth adjacent to the one being filled, and drawn through, so that the shoulder may rest tightly against the teeth. It makes no difference on which side of the tooth to be filled the teeth are to which the matrix is first adjusted. Suppose, for example, that the cavity to be filled be in a superior right lateral distal surface, and extending from the labial surface through to the lingual. It is desirable, perhaps, owing to greater decay being on the lingual surface, to build or apply the gold from the lingual surface, and therefore, the labial wall of the cavity will be formed by the matrix, which will in this case be first inserted between the right cuspid and first bicuspid, with the shoulder resting on the labial surface of the two teeth. The free end is then passed under the cuspid, and up and between it and the lateral over the labial surface of the latter, and down and between it, and the right central, and finally after passing under the central, it is pressed between the two centrals, and another shoulder curled on the end to maintain it. Conversely, if it be desirable that the gold be built from the labial direction, the order of procedure will be reversed, and the matrix pass over the opposite surfaces, beginning from the lingual surfaces of the cuspid and bicuspid, and so on.



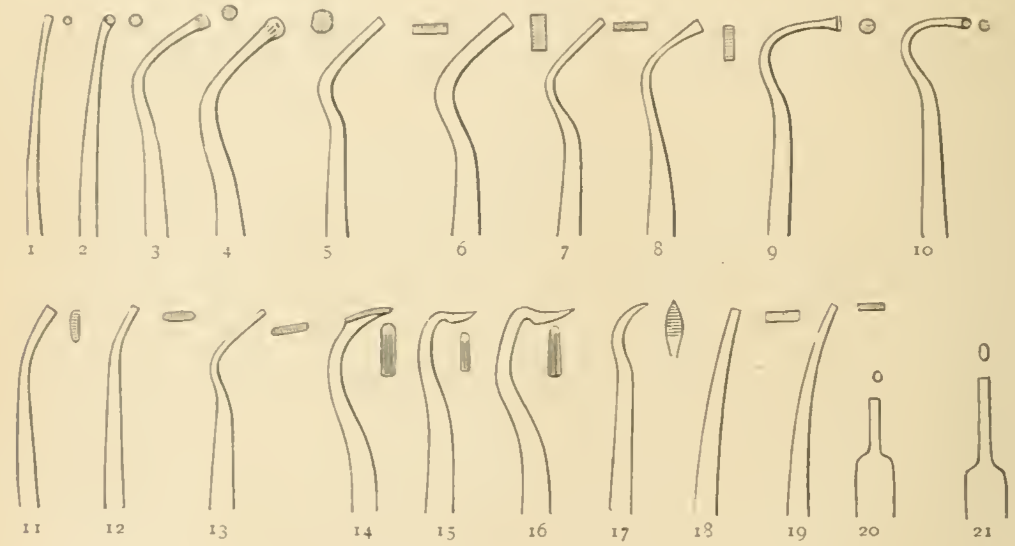
It will generally be found that the manner of application will retain it tightly enough, and if not, gutta-percha may be used as desired. Usually, the pressure exerted by thumb and forefinger, or aided by a serrated amalgam plugger, will steady the part next the margin of the cavity. Probably, its usefulness is shown to the greatest advantage in operating on cavities involving extensively both labial and lingual surfaces, or in such cavities as the disto-approximal aspects of the two cuspids, at all events where the gold is to be applied from the lingual surface. The preparation of cavities is practically the same as in other cases, except that in cavities as above mentioned, where the gold is to be applied from the lingual surface, it is wise to extend the cavity on that surface probably a little more than usual, in order to facilitate the proper instrumentation and thorough adaptation of filling material to the cavity margins; this will readily be appreciated on attempting a practical operation.

It is not the intention to invite a controversy as to the merits or demerits of any particular kind or style of gold, for that is a matter each individual must settle for himself. There is no reason why foils should not be used as successfully as in the posterior teeth. Such gold as Vernon's, which is much harder than the ordinary soft crystal or mat golds, would appear on trial, and mastery of its working qualities to be well suited for all cases. Such gold as the one mentioned above is often condemned through improper working, and if due pains be taken with the *proper* appliances for annealing, and the correct instruments for condensation, especially at the margins, the same result will undoubtedly be attained as with foil, so far as quality of filling be concerned. It is utterly useless to attempt to cover the margins, and thoroughly condense the gold at that vital part of the filling, unless the proper instruments are used; for instance, it would be folly to attempt to properly condense gold in the angle formed by the matrix, and the surface of the tooth next the cavity wall with a round plugger point. As to the methods of welding or condensation employed, it depends mainly on the operator. Some will prefer the various forms of mallets, mechanical, electrical, automatic, or hand, while others incline towards honest, reliable hand pressure, or a combination of the above, according as the progress and general conditions affecting the operation would indicate, especially with the forms of gold other than foil. The engine mallets, both right angle and direct action forms, have a decided place, providing the proper style of plugger point be used. In passing the gold from the lingual surface, hand pressure, followed by the right angle mallet, gives a suitable condensation. All margins should be gone over carefully with selected points in hand instruments, and then the mechanical mallets may be used to advantage with the body of the filling. The Powers' right angle mallet, as supplied by C. Ash & Sons, answers all requirements; but as the points supplied are round, it is recommended that a portion be ground off, so as to make it approximate the rectangular shape, and, by the way, none but the smallest points should be used in this mallet, otherwise the condensation of the gold will be imperfect.

Forms of Instruments.

Generally speaking, the same instruments are employed as in other classes of cavities where the matrix is used, but some additional forms will be found useful.

Figures 1, 2, 3 and 4 represent different forms of Royce points used in building the body of the filling. Figures 5 and 6 are rectangular points used for the same purpose. Nos. 7 and 8 are of similar outline to Nos. 5 and 6, but more delicate and where applicable, are used against the margins. Nos. 9 and 10, are intended for use in working the gold from the lingual surface, No. 9 being used for the body of the filling where the teeth are very thick, and the cavity deep (note the length of shank). No. 10 is to be employed in the incisal region.



(All Cuts of Serrated Surfaces Enlarged.)

For condensing the gold at the margins, Nos. 11, 12 and 13, with narrow surfaces more or less convex, will be found satisfactory in most cases. Nos. 14, 15 and 16 being Nos. 16, 17 and 18 respectively of the S.S.W. moss fibre set, will enable the operator to secure proper adaptation in places difficult of access, especially with gold other than foil. A foot plugger such as No. 17 will occasionally be useful in the engine mallet for final condensation of the gold, where the contact point rests against the matrix. Nos. 18 and 19 are the forms recommended for the direct engine mallet, and Nos. 20 and 21 those for the right angle, the shank of No. 21 being longer than No. 20, for use in deep cavities.

ROOT CANAL TREATMENT AND FILLING.

By Mark G. McElhinney, Ottawa.

If it will not be considered impertinent, I would like to contribute a few words to that interesting discussion between Drs. Magee and McInnes on the matter of root filling.

There have been tons of literature produced on the matter of root-filling—all theory—but Dr. Price has done more with his X-rays than the tons of literature could ever accomplish.

Years ago I came to the conclusion that it was mechanically impossible to fill all roots to the apex, that with nine out of ten practitioners it is mechanically impossible to fill one root out of dozens to the apex, and that roots do not need to be filled to the apex anyhow. If the roots are clean, and then saturated with a crystallizable antiseptic preparation it matters very little whether the roots are filled or not so long as they are thoroughly sealed against oral fluids.

As a matter of fact, I generally fill the roots so far as is convenient, with chloro-percha or silver. Silver I believe to be the most thorough root filling, but it has the disadvantage of difficult removal in case of periostitis, and, therefore, as I sometimes have such cases, I use silver only where the case is ideal. There is no such condition as a sure thing in dentistry, except amongst those who do not know the difference between success and failure.

The experiments by Dr. Price go to show that the majority of roots are very imperfectly filled, and yet our experience is that the majority of root-filling cases are reasonably successful so far as usefulness of the tooth is concerned.

What we want is good average results and not a host of unnecessary and pseudo-scientific refinements. With due respect, I think that Dr. Magee has furnished a valuable object-lesson to the profession, and though his efforts at "apex perfection" are a sheer waste of time, his experience with "that non-discriminating X-ray machine of Dr. Price" should be a valuable acquisition to himself and the rest of us.

Another consideration—mechanical skill, manipulative ability, manual dexterity, whatever name it be given, is the real basis of dentistry, operative and prosthetic. Knowledge and judgment are necessary, but secondary to manipulation.

There are ten operations in dentistry requiring skill for every one that requires knowledge; consequently the man with the skill wins out. The man that never handled tools, or performed a mechanical operation of whatever nature, until he studied dentistry, and who does no mechanical work outside of his profession, can never hope to have the skill of those who are born with "the bump of constructiveness" large. Moreover, he has not that eye which distinguishes a good operation from a bad one, and that is what keeps him satisfied with what he turns out. A really good workman is never satisfied, because he continually sees ahead the greater possibilities of more skill.

Fortunately, the usual run of dental operations is really very simple, consequently even a very ordinary operator can build a good practice.

When it comes to really difficult cases, there will never be more than half a dozen men at any one period who can successfully combat them.

Average fillings and dentures are very satisfactory because easy to make; but half of the gold crowns that are put in are made by men who could not fit a ferrule to a cane, and consequently do not fit. Root filling to the apex might be accomplished in a reasonable proportion of cases by an expert manipulator, but it is all the ordinary man can do to locate the canals, and pump them full of medicine. By the way, I infer that Dr. Magee uses drills in the roots, and, consequently, has some of his fillings through the perforations made by the drills.

It may be taken as a rule, with but two exceptions, that a drill should never be used in a root, because the long axis of the opening in the root is frequently greater than the shortest diameter of the root.

The roots of molars are frequently flattened, while those of bicuspids often approach an hour-glass section. The way to open a root is to make a special broach of piano-wire with a square or trianglar section, and nick little teeth on it with a hardened chisel or graver. When used with a sawing motion, this broach will open most canals sufficiently to allow proper treatment and filling.

The two exceptions above mentioned are pivot setting and boring into a filled tooth in order to treat abscess. There is no excuse for perforation except under these exceptions, for otherwise a drill should never pass beyond the pulp chamber.

Now, I do not wish it to be inferred that I consider Dr. Magee's work is in any way inferior. The very deep interest that he takes in the subject shows that he has given it great care and attention, and he must be very painstaking or he never would have attempted such a difficult problem.

EXTIRPATION OF PULPS AND FILLING ROOT CANALS.

By G. A. Bentley, D.D.S., London, Ont.

Read before the London Dental Society, December, 1907.

My reason for presenting a paper on this subject is not that I consider that I can give you anything new, but hoping that in the discussion which it may bring out, each of us may gain some point that may be of use to us, and to our patients. I will first consider the extirpation of pulps, and will take it under two heads: (1) By pressure anesthesia; (2) by the use of arsenious acid.

1. When I find that a pulp must be destroyed, the first step in either method is to get a thorough exposure. In order to do this it may be necessary to use a solution of cocaine. After thoroughly drying the cavity, apply a solution of cocaine in ether and alcohol mixed in the proportions of about 1 to 3. Cocaine is insoluble in ether, but is soluble in this mixture. The reason for using the ether is that the less dense the solution, the more readily it will penetrate the dentinal tubuli.

Place a pledget of cotton saturated with this cocaine solution in the cavity, and apply pressure with soft rubber and a burnisher. Carbolic acid and cocaine may be used in the same way with good results. Having obtained a thorough exposure, and having the cavity free from moisture, either by the use of the rubber dam or napkins and the saliva ejector, apply a few crystals of cocaine to the exposed pulp; over this place a pledget of cotton, or spunk saturated with adrenalin chloride; over this place a piece of soft rubber, and after waiting a minute or two apply pressure. I formerly used alcohol where I now use adrenalin chloride, but in some cases had trouble from excessive hemorrhage, which this does away with. When no sensation is felt on pressure freely open the pulp chamber, so that access may be had to the root canals. Take a Donaldson broach which has been previously sterilized and pass to the apex of the root, if possible; give it a half turn and remove the pulp.

2. *By the use of arsenious acid.*—I seldom use this method in any except molar teeth, and would not use it there if I could avoid it, but I have not been very successful with the other method in molars. Take a few fibres of absorbent cotton, and roll into a ball, saturate with campho-phenique, touch it to a napkin to remove any excess of campho-phenique, so that it will not squeeze out and carry arsenic with it. Touch this pledget of cotton to arsenious acid powder, so as to get the smallest quantity of the arsenic, place this on the exposed pulp, and seal up the cavity with temporary

stopping. If the cavity is of such a shape that temporary stopping is liable to get displaced, I use cement, mixed quite thin, to seal the cavity. This I leave in for from twenty-four to forty-eight hours, when I remove it, and apply a dressing of a saturated solution of tannin in creosote, which I leave in for from four to eight days. This, I find, toughens the pulp, and it can usually be removed entire without pain. Should the portion of the pulp near the apex remain sensitive, the solution of cocaine in ether, forced up after thoroughly drying the cavity, will be found useful.

For enlarging fine root canals, I find the Kerr universal broach very useful, as it can be used in places where it is almost impossible to work with a Gates-Glidden drill, and it is much safer. I think that Dr. Price has shown the danger of using drills in the skiagraphs which he has prepared of the roots as filled by Dr. Magee.

After removing the pulp, I flood the canals with peroxide of hydrogen, which removes any blood or shreds of the pulp which may remain. Some recommend the use of 50 per cent. sulphuric acid, followed by peroxide of sodium, but I do not consider it necessary. If the root is entirely free from tenderness, and there is no weeping at the apical opening, I proceed to fill at once. If, however, there is any soreness, I apply a dressing of camphophenique, and leave for a few days as I find that this soreness is more easily removed before than after filling. In a few cases I have found it impossible to remove the pulp from the apical portion of the root without a great deal of pain, and, in such cases, have put a dressing of cotton or creosote, and left it sealed up with oxyphosphate for a few months, when they can usually be opened up, and, after a treatment or two, be filled without pain. In these cases I always instruct the patient to return at once if any soreness appears around the tooth.

Filling Root Canals.—When the roots of a tooth are ready for filling, thoroughly dry out each root by the use of a hot air syringe and a platinum broach, which I heat in the flame, and insert into each root.

Wipe out each root with oil of eucalytus, and pump chlorapercha into the root canals. Do not use too much force where you have a large apical opening. Having selected a gutta-percha point, a little longer than the length of the root to be filled, and as near the same size as the canal as you can approximate, force the cone into the root canal with a pumping motion, holding it in the pliers. In this way the point, if too large, will become softened, and may be forced up to the apex. Where the apical opening is large, I cut off the fine point of the gutta-percha cone to prevent its passing through. When a point has been worked up into each root, I soften the protruding ends with a blast of hot air, and press them up with a root canal plugger, and then burnish them down smooth. The pulp chamber can then be filled with gutta-percha, oxyphosphate, or oxychloride. Many claim that oxychloride is the best for this purpose, it being antiseptic, and seals the chamber so that the moisture will not penetrate should the filling over it leak.

This, gentlemen, is my method, and I claim that it is the best method for me. Some other method may be the best for you. My opinion is that the small details of the work are the ones that count. I do the best I can, and I think I have been fairly successful. I do not claim to fill all roots to the apex, but I have filled a great many, and made the teeth useful for years; whether the fillings reached to the apex or not, I did the best I could to make them reach there, and who can do more?

A METHOD OF APPLYING A LOCAL MEDICINAL AGENT AS A MEANS OF OBTUNDING SENSITIVE DENTINE.

By Geo. Gow, D.D.S., Toronto.

Read before the Odontological Club, Toronto.

A saturated solution of carbolic acid crystals in alcohol, has long been in favor as a local means of obtunding sensitive dentine. The usual method is to dry the cavity and place therein a pellet of cotton, soaked in the medicament and then apply blasts of hot air from a chip syringe. This yields good results, but where the following modification of the method of applying it may be practised, the operator will be enabled to cut through a greater area. All the loose decay being removed with excavators, care should be taken to dessicate the cavity by the application of alcohol and the use of hot air. Then apply a pledget of cotton, which has been moistened in the carbolic acid solution, and select a ball burnisher to fill approximately the cavity; heat the burnisher to a red heat and apply more or less heavily, as the patient submits, until the instrument is cool. Repeat the application of the hot burnisher until the cotton is dry and charred. After cutting to a varying depth it will be found necessary to repeat the above until a sufficient depth is secured. The object is to confine the fumes within the cavity, driving them ahead into the tubuli. Using the warm-air method, there is a greater evaporation of medicament, and consequently it is lost from the cavity, whereas by virtue of the contact of the burnisher and the cotton, a greater quantity is forced into the tubuli. From the nature of the application it would seem that small cavities at the cervical margin of anterior teeth, and small approximal cavities are best suited for this method, since the pain of applying the greater amount of heat necessary for large cavities would be more objectionable to the patient than the actual cutting. This sensitiveness to heat varies with different patients, some being unable to stand it at all, while others apparently do not mind it. One thing is certain, wherever sufficient heat may be applied so that the cotton is charred, there need be no fear of pain in subsequent cutting of the dentine affected by the agent.

IMPERIAL FEDERATION OF THE MEDICAL PROFESSION.

Dr. H. A. Bruce, in proposing the toast of "The Empire," at the dinner given by the medical faculty and students of Toronto University, last week, said:

"We have heard a great deal lately about Imperial Federation. I would like to refer to a subject which is of the very greatest importance to those of our profession, and, if I might be allowed to use the term, will call it the Imperial Federation of the Medical Profession. We have in Canada eight provinces, each possessing a licensing body of its own, and each requiring a separate examination. In other words, a license obtained in Ontario is only good to practise in Ontario; a license obtained in the Province of Quebec only entitles one to practise in the Province of Quebec, and so on with all the other provinces. It is an outrage that we should have in Canada eight Chinese protective walls separating the medical men of the different provinces. In this Western Hemisphere, we pride ourselves on our broadness and progressiveness, and still this narrow provincialism exists. As the law stands to-day a medical man cannot cross the imaginary line between the provinces to save human life without the risk of fine and imprisonment. Even between the unfriendly countries of France and Germany there is a neutral territory of fifteen miles over which medical men may pass to and fro unmolested in the discharge of their professional duties.

"Recently, Dr. Roddick, of Montreal, with commendable energy and spirit, succeeded in having passed through the Dominion Parliament an Act known as the 'Canadian Medical Act,' to remedy this unfortunate state of affairs. This Act was for the purpose of creating a Dominion Medical Council, which would hold its examinations and whose license would entitle the possessor to practise in any part of our Dominion. In the original draft of Dr. Roddick's bill it was stipulated that when five or more provinces passed the necessary legislation the work of the Dominion Medical Council could begin. This was afterwards changed, making it necessary that all the provinces consent before the Dominion Medical Council could be established. The Legislature of the Province of Quebec declined to accept it, and consequently the Act is inoperative. Nova Scotia, Prince Edward Island, Manitoba and the Territories have accepted it; New Brunswick and Ontario are ready to accept it; therefore even with the dissent of the Province of Quebec we would now have the Council established, and the barrier between the provinces consenting would have been torn down.

"We as Canadians suffer also the disadvantage of not having our degree recognized in the United Kingdom, and the many positions in the army and navy of Great Britain, and on merchant ships from British ports, and the various colonial appointments all over the Empire are not open to us until we obtain a British qualification. Many of our graduates who fought the Empire's battles in South Africa were anxious to remain there, but found this an insuperable difficulty. Australians are in a different position, as they have been able to arrange reciprocity with the Mother Country. If this scheme of Dr. Roddick's were passed, and we had a Dominion license, we could at once arrange reciprocity based on the British amendment of 1886, and this would greatly relieve the congestion by opening the whole Empire to our graduates.

"Now, in order that the Canada Medical Act may become operative, it will be necessary for the profession in the provinces wishing it to insist upon their representatives in Parliament the necessity of so amending the Act as to carry out the original draft of Dr. Roddick's bill.

"I have no doubt, in the course of a few years' time, that the profession in Quebec will see that they have made a serious mistake in refusing to accept this legislation, and will then be seeking its benefits. I look upon the Canada Medical Act as one of an Imperial character, and therefore consider it proper to speak of it in connection with the Empire."

AN ORDINANCE RESPECTING DENTISTRY.

(Assented to November 21st, 1903.)

The Lieutenant-Governor, by and with the advice and consent of the Legislative Assembly of the Territories, enacts as follows:

Short Title.

Short title

1. This Ordinance may be cited as "*The Dental Profession Ordinance.*"

Interpretation.

Interpretation

2. In this Ordinance, unless the context otherwise requires—

The word "college" shall mean "The College of Dental Surgeons of the North-West Territories" incorporated by this Ordinance;

The word "council" shall mean the council of the said college provided for by this Ordinance;

The word "secretary" shall mean the secretary of the said council;

The words "legally qualified," "dental practitioner," or "duly qualified dental practitioner," or any other words implying legal recognition of any person as a dental practitioner or member of the dental profession shall mean a person registered under the provisions of this Ordinance.

College of Dental Surgeons.

College of Dental Surgeons constituted

3. The members of The Dental Association of the North-West Territories, as constituted by *The Dentistry Ordinance,* being chapter 53 of The Consolidated Ordinance 1898, and all persons registered as members as hereinafter provided, are hereby constituted a body corporate, under the name of "The College of Dental Surgeons of the North-West Territories," and shall be deemed a body politic and corporate and shall have perpetual succession and a common seal, with power to sue or be sued, and to acquire, hold or dispose of chattel property and real estate for the purpose of this Ordinance.

Council of College—Election of Members.

Council

4. There shall be a council of the said college to be appointed in the manner hereinafter provided and hereinafter referred to as the council.

Qualified voters

5. The persons entitled to vote at elections of members of the council shall be persons registered as dental practitioners in pursuance of this Ordinance.

Members of council

6. No person shall be eligible to be elected as a member of the council unless he is registered in pursuance of this Ordinance.

Five members

7. The council shall consist of five members, to be elected as hereinafter provided.

Conduct of elections

8. The charge and conduct of the election for members of the council shall be under the management of the secretary of the council and the time and place of such election shall be determined by the council, so that, however, there shall be an election in every odd numbered year.

Votes

9. Every person entitled to vote may vote for five members and in case of any person placing more than five names on his voting paper the first five only shall be counted.

Method of voting

10. Such votes shall be given by closed voting paper in the Form A in the schedule to this Ordinance, signed by the voter and delivered to the secretary on the day of election or within the twenty days preceding it. Any voting paper received by the secretary by post shall be deemed to be delivered to him.

Scrutineers

11. The council shall appoint two persons who, with the secretary, shall act as scrutineers at the election. On the day succeeding the day of election the secretary shall, in the presence of the other two scrutineers, proceed to open the voting papers and count the votes and record the same in a book of record to be provided by the council.

Voters may be present

12. Any person entitled to vote at an election shall be entitled to be present at the opening and counting of the voting papers.

Term

13. The five persons who have the highest number of votes shall be the members of the council for the two years from the first day of January next after the date of the election or until their successors are elected.

Equality of votes

14. In case of an equality of votes between two or more persons the scrutineers shall forthwith put into a ballot box a number of papers equal to the number of candidates who have an equality of votes, the said papers, each having the name of one of such candidates written thereon, being one paper for each such candidate. The said papers shall be folded so that the name of the candidate shall be on the inside and not distinguishable without the paper being opened. The papers shall be mixed in the ballot box in the presence of the

other two scrutineers and the secretary shall draw by chance from such ballot box, in the presence of the other two scrutineers, one or more papers, sufficient to make up the required number of persons, and the persons whose names are so drawn shall be deemed to be elected members of the council.

Eligibility.

15. No person shall be entitled to vote at such elections after the first election, unless his fees to the council are paid. No person shall be eligible unless qualified to vote at such elections, and the votes cast for any person who is ineligible to vote shall be null and void.

List to be made out.

16. The secretary shall, one month previous to the day on which the election is to be held, make out an alphabetical list of the registered practitioners entitled to vote, and forward by mail prepaid a copy of the said list, together with a copy of the voting paper in Form A in the schedule hereto to each registered practitioner.

(2) In case any registered practitioner complains to the secretary in writing of the improper insertion or omission of any name in the said list, it shall be duty of the secretary to examine into the said complaint and rectify the error if there be any; and in case the party complaining is dissatisfied with the decision of the secretary, he may appeal to a judge of the Supreme Court, provided such appeal is made within ten days before the day on which the election is to be held; and such judge shall hear and decide such appeal in a summary way, and such notice as the said judge shall direct shall be given to the persons specified in the notice, before the said hearing, and if he deems necessary evidence may be taken by him *viva voce* under oath or by affidavit according as he shall direct, and the decision of such judge shall be final.

Voters' list conclusive.

17. The list so made out by the secretary, with any amendments that may be made thereto by the judge of the Supreme Court as aforesaid provided, shall be held to be the register of the persons entitled to vote and no person shall be entitled to vote whose name is not on such register or list.

Election regulations.

18. The members of the council may make such regulations as they consider expedient, not inconsistent with this Ordinance, for regulating the procedure in such elections.

Voting papers to be preserved.

19. The voting papers belonging to any election shall not be destroyed until after petitions in respect to such election have been decided, but the same, together with all other papers in connection with such

election, shall be retained by the secretary for three months after such election.

Disputed election

20. No petition against the return of any member shall be entertained by the council unless such petition is filed with the secretary within sixty days after such election, and unless a copy of such petition is served on the member whose election is disputed within sixty days after such election.

Inquiry into disputed election

21. Upon receipt of any such petition against the election of any member by the secretary, he shall, upon proof that notice as aforesaid has been served on the member whose election is disputed, forthwith notify the council and the council shall meet within one week after said notice and the council shall hold an inquiry into the said disputed election and shall decide the same and their decision shall be final. If the election is found to be illegal the council shall thereupon order a new election.

Vacancies in council, how supplied

22. In case of the failure to elect the requisite number of duly qualified members of the council or in case of the death or resignation of any of the members or in case of a vacancy by any other cause then it shall be the duty of the remaining members of the council to supply the deficiency by appointing to such vacant place or places as may thus occur any person duly qualified under this Ordinance to become a member.

President and Officers.—Meetings of Council.

Officers

23. The council shall from among its members annually appoint a president, vice-president and secretary-treasurer and such other officers as may from time to time be deemed necessary for the carrying out of this Ordinance, who shall hold office for the term of the council and until their successors are appointed and the council may by by-law affix the salaries of such officers and of the board of examiners hereinafter appointed.

Executive

24. The council shall annually appoint from among its members an executive committee, who shall take cognizance of any action upon all such matters as shall be delegated to it by the council or as shall require immediate attention between the adjournment of the council and its next meeting, but the said committee shall have no power to alter, repeal or suspend any by-law of the council.

Meetings

25. The council shall make rules and regulations as to the time and place of future meetings of the council and of the manner of summoning the same, which rules and regulations shall remain in force until

altered at any subsequent meeting and in the absence of any such rule or regulation it shall be lawful for the president, or in the event of his death the secretary, to summon the council at such time and place as to him shall seem fit.

Procedure

(2) In the event of the absence of the president the vice-president, or in the event of his absence any member of the council chosen from among the members of the council, may act as president.

(3) All acts of the council shall be decided by the majority of the members present, three members being required to form a quorum.

(4) The president or acting president shall at all times have a vote in the council.

Fees to members of council

26. There shall be paid to the members of the council such fees for attendances and such reasonable travelling expenses as shall from time to time be fixed by the council.

REGISTRATION.

Register

27. The council shall cause to be kept by the secretary a book or register, in which he shall enter the name of every dental practitioner who is entitled to be registered under the provisions of this Ordinance and from time to time the names of all persons who comply with the said provisions and those persons only whose names are inscribed in such book or register shall be deemed to be qualified to practise dentistry or dental surgery in the North-West Territories and such book shall be open to inspection at all times.

Secretary's duties

28. It shall be the duty of the secretary to keep his register correct in accordance with the provisions of this Ordinance and the rules, orders and regulations of the council and he shall from time to time make the necessary alterations in the addresses or qualifications of the persons registered under this Ordinance and the said secretary shall perform such other duties as may be imposed upon him by the council not inconsistent with this Ordinance.

Qualifications of members of college

29. The following persons, upon payment of the prescribed fee, shall be entitled to be registered as members of The College of Dental Surgeons of the North-West Territories:

(*a*) All persons who are at the time of the passing of this Ordinance members of The Dental Association of the North-West Territories.

(*b*) Any person possessing a diploma of graduation in dental surgery from any Canadian dental college or any Canadian university having a special dental department or from any such institution duly authorized by the laws of Great Britian or any of her dependencies.

(*c*) Any member of any incorporated college of dentistry or dental surgeons of any province of Canada having powers similar to those conferred by this Ordinance upon The College of Dental Surgeons of the North-West Territories by which, under the laws of the province governing the said incorporated body, similar rights to register and to practise dentistry are granted to the persons registered under this Ordinance.

(*d*) Any person holding a diploma or certificate of qualification from a dental college or school of dental surgery which at the time when such person applies for registration grants its diploma or certificate of qualification only after a four-year course of lectures and practice and producing satisfactory evidence that the holder of such diploma or certificate is recognized as qualified to practise dentistry in the country, province or state within which such diploma or certificate has been granted.

(*c*) Any person licensed or entitled to be licensed to practise dentistry or dental surgery in the United Kingdom of Great Britain and Ireland.

(*f*) Any person who shall satisfy the council that he has practised dentistry or dental surgery for at least five years and shall pass before the members of the council, or such examiners as may be appointed for the purpose, a satisfactory examination touching his fitness and capacity to practise as a dentist or dental surgeon.

Registration fee

30. The fee payable for registration under the next preceding section shall be the sum of $50, except for persons registered under clause (*a*) thereof, who shall not be required to pay any fee for such registration.

Annual membership fee

31. Each member shall pay to the secretary or to any person deputed by the secretary to receive it such annual fee as may be determined by by-law of the council not exceeding $2 towards the general expenses of the council which fee shall be payable on the first day of January in each year and such fee shall be deemed to be a debt due by each member of the said college:

Provided that the council may in any case in which it deems expedient remit any annual fees due to the college by any member who is or has been a resident out of the Territories during the period in respect of which fees become due.

Appeal from refusal to register

32. Any applicant for registration under section 29 whose application is refused may appeal to a judge of the Supreme Court, who may hear such appeal and make such order thereon as may seem just.

Erasure of name from register

33. The council may at any time direct that the name of any person improperly registered be erased from the register.

General Powers of Council.

Council to regulate register and examinations

34. The council shall from time to time as the occasion may require make regulations and by-laws for regulating the register to be kept under this Ordinance and shall from time to time make rules and regulations for the guidance of the examiners and may prescribe the subjects and modes of examinations and generally make all such rules and regulations in respect of examinations not contrary to the provisions of this Ordinance as the council may deem expedient and necessary.

General rules

35. The council may from time to time make, alter or amend and repeal rules and regulations for the well being and discipline of the council, the conduct of its affairs and the promotion of dental and surgical knowledge and the disposition of the funds of the council, provided such rules and regulations be not repugnant to the provisions of this Ordinance.

Central Examination Board.

Examining boards

36. The council shall have power to establish an examining board and to prescribe fees for examinations and may, conjointly with the council or councils of colleges of dentistry or dental surgeons incorporated under any act of the Legislature of any province of Canada possessing powers similar to those conferred on The College of Dental Surgeons of the North-West Territories, constitute a central examining board and delegate to such boards all powers possessed by the said council respecting the examination of candidates for admission to practise dentistry or dental surgery, including the imposition of examination fees:

Provided that such powers shall not be exercised unless the persons passing any examinations of such central examining board shall, on complying with the laws and rules of the respective councils in other respects, be entitled to registration as legally qualified dental practitioners in the province whose councils may have conjointly with the said council established such central examination board; and

Provided further that any examinations conducted by such central examining board shall be held in at least one place within the Territories simultaneously with such examinations held in any province.

Disciplinary.

Misconduct of registered practitioner

37. If any registered dental practitioner shall be convicted of any indictable offence, or shall after due inquiry be judged by the council to have been guilty of infamous conduct in any professional respect, such council may if it sees fit direct the secretary to erase the name of such practitioner from the register and the name of such person shall be erased by the secretary from the register.

Inquiry

38. The council may and upon the application of any three registered dental practitioners shall cause inquiry to be made in the case of a person alleged to be liable to have his name erased under the next preceding section and on proof of such conviction or infamous conduct shall cause the name of such person to be erased from the register:

Provided that the name of a person shall not be so erased on account of his adopting or refraining from adopting the practice of any particular theory of dentistry or dental surgery, nor on account of a conviction for a political offence out of His Majesty's dominion, nor on account of a conviction for an offence which though within the provisions of the last preceding section ought not in the opinion of the council or the committee hereinafter named, either from the trivial nature of the offence or from the circumstances under which it was committed, to disqualify a person from practising dentistry or dental surgery.

Costs

39. The council may order to be paid out of the funds at their disposal such costs as may to them seem just to any person against whom any complaint has been made which when finally determined is found to have been frivolous and vexatious.

Name erased not to be restored without authority

40. Where the council direct the erasure from the register of the name of any person or of any other entry the name of that person or that entry shall not be again entered on the register except by the direction of the council or by the order of a judge of the Supreme Court.

Restoration of name erased

41. If the council see fit in any case they may direct the secretary to restore to the register any name or entry erased therefrom either without fee or on payment of such fee, not exceeding the registration fee, as the council may fix, and the secretary shall restore the same accordingly.

Committee of inquiry

42. The council shall, for the purpose of exercising in any case the power of erasing from and restoring to the register the name of any person or other entry, ascertain the facts of such case by a committee of their own body of whom the quorum shall be three and a written report of the committee may be acted upon as to the facts therein stated for the purpose of the exercise of the said powers by the council.

Constitution of committee

43. The council shall from time to time appoint and shall always maintain a committee for the purposes prescribed in the last preceding section and subject to the provisions of this Ordinance, may from time to time determine the constitution and the number and tenure of office of the members of such committee.

Legal assistance

44. The committee appointed under the preceding section may, for the purpose of the execution of their duties under this Ordinance, employ at the expense of the council such legal or other assistance as to the committee may seem necessary or proper and the person whose conduct is the subject of inquiry shall also have the right to be represented by counsel:

Counsel

Provided that all meetings of such committee when held for taking evidence or otherwise ascertaining the facts shall be held within the judicial district or sub-judicial district where the member complained of resides or the alleged offence was committed, unless he shall consent to have the inquiry elsewhere.

Procedure on inquiry

45. At least two weeks before the first meeting to be held for taking evidence or otherwise ascertaining the facts a notice shall be served upon the person whose conduct is the subject of inquiry, and such notice shall embody a copy of the charges made against him or a statement of the subject matter of the inquiry and shall also specify the time and place of such meeting. The testimony of witnesses shall be taken under oath, which the chairman of the committee is hereby authorized to administer, and there shall be full right to cross examine all witnesses called and to adduce evidence in defence and reply.

Subpœna

46. For the purpose of procuring the attendance and evidence of a witness before the committee a judge of the Supreme Court may, on application of any party to the inquiry, order the issue by the clerk of the Supreme Court or a deputy clerk of a writ of subpœna *ad testificandum* or a writ of subpœna *duces tecum.*

The rules of evidence on such inquiry and the proceedings and penalties in the case of disobedience to any such writ shall be the same as obtain in civil cases in said court.

47. In the event of the non-attendance of the person whose conduct is the subject of such inquiry the committee may, upon proof of the personal service of the notice aforesaid in accordance with the provisions of this Ordinance, which proof of service may be by statutory declaration, proceed with the subject matter of the inquiry in his absence and make their report of the facts without further notice to such person. Non-attendance of accused

48. Any person whose name has been ordered to be erased from the register may appeal from the decision of the council to a judge of the Supreme Court at any time within six months of the date of the order for such erasure and such judge may upon the hearing of such appeal make such order as to the restoration of the name so erased or confirming such erasure, or for further inquiries by the committee or council into the facts of the case or otherwise and as to costs as shall seem just. Appeal to judge

49. The secretary shall, upon the request of any person desiring to appeal, furnish such person a certified copy of all proceedings, reports, orders and papers upon which the committee or council have acted in making the report or order complained of and such certified copy may be used by the appellant in evidence as if it were the original of which it purports to be a copy. Evidence on appeal

Rights of Registered Practitioners.

50. Every person who has been registered and has paid his annual fee under the provisions of this Ordinance shall be entitled to practise dentistry and dental surgery or either of them in the Territories and demand and recover in any court in the said Territories with full costs of suit reasonable charges for professional aid, advice and visits and the cost of any medicine or surgical appliances rendered or supplied by him to his patients. Rights of persons registered

51. No person shall be entitled to recover any charge in any court of law for any dental or surgical advice or for attendance or for the performance of any operation or for any medicine which he may have prescribed unless he is registered under this Ordinance and has paid his annual fee. Unregistered person cannot recover charges

Publication of Dental Register.

52. The secretary shall from time to time and at least once in each year, under the direction of the council, cause to be printed and published a correct register of the names in alphabetical order according Register of practitioners, publication and effect of

to the surnames, with the respective residences in Form B in the schedule to this Ordinance or to the like effect, together with the dental titles, diplomas or qualifications conferred by any college or body of all persons appearing on the register as existing on the day of publication, and such register shall be called The North-West Territories Dental Register, and a copy of the register for the time being purporting to be so printed and published as aforesaid shall be *prima facie* evidence in all Territorial courts and before all justices of the peace and all others that the persons therein specified are registered according to the provisions of this Ordinance and subject to the provisions of sub-section (2) of this section the absence of the name of any person from such copy shall be *prima facie* evidence that such person is not registered according to the provisions of this Ordinance.

(2) A certificate under the hand of the secretary certifying that any person is registered under this Ordinance shall be *prima facie* evidence that such person is so registered.

EVIDENCE OF REGISTRATION.

Further evidence of registration

53. In all cases where proof of registration under this Ordinance is required to be made the production of a printed or other copy of the register or of any extract therefrom certified by the secretary, and under the corporate seal of the college, shall be sufficient evidence of registration in lieu of the production of the original register, and any certificate purporting to be signed by any person in his capacity as secretary of the council, under this Ordinance shall be *prima facie* evidence that such person is such secretary, without any proof of his signature or of his being in fact such secretary.

OFFENCES AND PENALTIES.—PROSECUTIONS.

Practitioners omitting to register

54. Any person entitled to be registered under this Ordinance but who neglects or omits to be so registered shall not be entitled to any of the rights and privileges conferred by registration so long as such neglect or omission continues, and he shall be liable to all the penalties imposed by this Ordinance, or any other Ordinance in force against unqualified or unregistered practitioners.

Unregistered persons practising for reward

55. No unregistered person shall practise dentistry or dental surgery for hire or hope of reward; and if any person not registered pursuant to this Ordinance for hire, gain or hope of reward, practises or professes

to practise dentistry or dental surgery, he shall be guilty of an offence, and on summary conviction thereof be liable to a penalty not exceeding $100..

Pretending to be a dentist

56. Any person who wilfully and falsely pretends to be a dentist, dental surgeon or dental practitioner, or assumes any title, addition or description other than he actually possesses or is legally entitled to, shall be liable on summary conviction thereof to a penalty not exceeding $50 and not less than $10.

Assuming false title

57. Any person not registered pursuant to this Ordinance who takes or uses any name, title, addition or description implying or calculating to lead people to infer that he is registered under this Ordinance, or that he is recognized by law as a dentist or dental surgeon or a licentiate in dentistry or dental surgery, shall be liable upon summary conviction to a penalty not exceeding $100 and not less than $25.

Prosecutions, penalty

58. Any prosecutions under this Ordinance may be brought or heard before a justice of the peace, and in case the penalty and costs awarded are not upon conviction forthwith paid, the justice may commit the offender to a common gaol there to be imprisoned for any term not exceeding one month, unless the penalty and costs are sooner paid.

Onus of proof

59. In any prosecution under this Ordinance the burden of proof of registration shall be upon the person charged.

Limitations of prosecution

60. Every prosecution under this Ordinance shall be commenced within six months from the date of the alleged offence.

Council may withdraw prosecution

61. The council, by an order signed by the president, having the seal of the council appended thereto, may withdraw any prosecution under this Ordinance where it is deemed expedient.

Application of fine

62. All fines and penalties imposed under any of the provisions of this Ordinance, and all moneys to be received and levied thereunder shall, after the receipt thereof by the person authorized to receive the same, be forthwith paid by such person to the treasurer for the uses of the college.

RETURNS.

General returns may be called for

63. The secretary, whenever required by the Lieutenant-Governor, shall transmit to the Territorial secretary a return verified by oath, setting forth all such information and particulars relating to the college as may from time to time be required.

Miscellaneous.

Procedure before judge

64. Where under this Ordinance any application is authorized to be made to or any proceedings authorized to be taken before a judge of the Supreme Court, such application or proceedings may be by originating summons in accordance with the rules of Court.

Property

65. All the real and personal property of The Dental Association of the North-West Territories and all the books, papers and documents belonging to the said association, shall on the coming into force of this Ordinance become vested in and become the property of The College of Dental Surgeons of the North-West Territories.

Provisional secretary

66. The Lieutenant-Governor in Council may appoint a provisional secretary of the council, who shall hold office until a secretary is appointed by the council, and who shall perform all the duties of the secretary for the purpose of holding the first election of members of the council, and shall for the purposes of said election appoint two scrutineers, who shall act with him for the purpose of opening and recording the voting papers.

Appointment of auditor

67. The Lieutenant-Governor in Council may also appoint an auditor, who shall proceed with all convenient speed to audit the books and accounts of the dental association hereinbefore referred to and report to the council.

Secretary of association to furnish list of members, etc.

68. The secretary-treasurer of the said dental association shall forthwith, upon the appointment of the provisional secretary of the council, furnish him with a list of all the members of the said dental association and deliver to him all moneys in his possession or power the property of the said association, and shall also forthwith, on the appointment of the auditor in the next preceding section mentioned, deliver to him all books, papers and other property of the said association for the purpose of his audit, which shall be delivered by him to the council with his report.

First election

69. The first election of members of the council shall be held within three months after the coming into force of this Ordinance.

Term of office of first council

70. The members elected to the council at such first election shall hold office until the first day of January, 1906, and until their successors are elected.

Expense of first election, how paid

71. The expenses of the first election and the auditor's and provisional secretary's fees, which shall be fixed by the Lieutenant-Governor in Council, shall be paid out of the moneys received from the secretary-

treasurer of the said dental association and in the event of such moneys being insufficient, any deficiency shall be paid by the council.

First meeting of council

72. The provisional secretary shall call the first meeting of the council within two weeks after the holding of the said election.

Ordinance not to apply to medical practitioners

73. The provisions of this Ordinance shall not apply to any registered practitioner of medicine or surgery in the Territories.

Repeal

74. Chapter 53 of *The Consolidated Ordinances* 1898, Chapter 9 of the *Ordinances of* 1899, Chapter 16 of the *Ordinances of* 1900 *and Chapter* 6 of the *Ordinances of* 1902 are hereby repealed.

SCHEDULE.

FORM A.

THE DENTAL PROFESSION ORDINANCE VOTING PAPER FOR ANNUAL ELECTION.

I, John Williams, a registered dental practitioner, vote for the five persons hereinafter named to form members of The Council of College of Dental Surgeons of the North-West Territories:

1

2

3

4

5

And I, John Williams, solemnly declare that I am entitled to vote at this election and that I am not in default of my fees to the council.

Dated at this day of 1903.

Witness

FORM B.

NAME	RESIDENCE	QUALIFICATION

YUKON DENTAL ORDINANCE.

The Commissioner of the Yukon Territory, by and with the advice and consent of the Council of said Territory, enacts as follows:

1. This ordinance may be cited as "The Dentistry Ordinance."

2. The territorial secretary shall cause to be prepared a register for the Yukon territory.

3. He shall forthwith cause to be entered in such register, with the date of entry, the name of every person who at the time of the passing of this ordinance is and has been for twelve months next preceding such time actively engaged in the Yukon territory in the practice of the profession of dentistry or dental surgery and who verifies such act by statutory affirmation. And shall from time to time upon application and production of satisfactory evidence enter in such register with the date of entry the name of every person who possesses a diploma of graduation in dental surgery in any dental college in Canada or from any university in Canada having a special dental department or from Britain or any of her dependencies.

1. Sub-section 2 of Section 3 of the Ordinance Respecting the Practice of Dentistry is amended by striking out the words "or from any dental college or university having such department" to the end of said sub-section.

Every person who has served two years as an apprentice to the dental profession within the Yukon territory having at the time of the commencement of such apprenticeship and during such two years the qualifications contained in any one of the preceding sub-sections of this section and whose name was at such time and during such two years entered in such register under this ordinance, if such person has passed such examination as is prescribed by the Commissioner of the Yukon Territory, and obtains from such practitioner to whom he was apprenticed a certificate of satisfactory and good moral character.

2. Sub-section 3 of Section 3 is amended by striking out the words "Commissioner of the Yukon Territory" and substituting therefor the words "Dental Board."

3. Said Section 3 is further amended by adding the following sub-section:

"(4) Every person who produces a diploma of graduation from a foreign dental college or school of dentistry, or who furnishes a certificate from the Government of his country, authorizing him to practise in his country, and passes the examination hereinafter prescribed."

4. The territorial secretary shall not enter in such register any person until such person has paid to the comptroller of the Yukon Territory a fee of $50, if he is entitled to be so entered under any other subsection of said section.

5. From and after the first day of December, A.D. 1901, no person shall practise the profession of dentistry or dental surgery

within the Yukon Territory unless his name has been entered in such register under the provisions of this ordinance.

6. The Commissioner may from time to time appoint one or more examiners in dentistry or dental surgery within the Yukon Territory unless his name has been entered in such register under the provisions of this ordinance.

4. Section 6 of said Ordinance is repealed and the following section substituted therefor :

"6. On the 1st day of August, 1903, and on or before the 1st day of August in each and every alternate year thereafter the Commissioner of the Yukon Territory shall appoint two or more examiners in dentistry and dental surgery, to be called the Dental Board, to serve for a period of two years or until their successors are appointed, whose duty it shall be to examine the credentials of the candidates, prepare examination papers and conduct examinations. In the event of a vacancy on the said Board caused by the death, resignation, removal from the country, or otherwise, the Commissioner shall appoint another or others in their stead.

"(2) Every candidate for examination shall pay to the Dental Board such fee as is fixed by the Commissioner for such examination, and shall produce a diploma of graduation from a dental college or school of dentistry or satisfactory evidence of having served an apprenticeship as provided for in this Ordinance, and pass an examination in the following subjects : Anatomy, Physiology, Chemistry, Histology, Materia Medica, General and Dental Pathology, Therapeutics, Metallurgy, Operative and Prosthetic Dentistry, Oral Surgery and such other subjects as are prescribed by such Board from time to time and approved by the Commissioner."

"(3) The Dental Board may retain the examination fee in payment for their services as such examiners."

7. The commissioner may from time to time appoint one or more examiners in dentistry or dental surgery, and may obtain from them a report of the subjects suitable and proper for the examination of candidates under this ordinance, and may upon such advice as he deems proper fix and publish the list of such subjects.

5. Section 7 of said Ordinance is repealed and the following section subtituted therefor :

"7. A certificate from the Dental Board that a candidate has passed the prescribed examination shall entitle such candidate to be registered upon payment of the registration fee."

8. The list of subjects, the papers prepared for such examination, and the answers of candidates or any of them may be submitted by the commissioner to any authority he sees fit, to determine the fair and proper character of such list and papers and the characters of such answers.

9. The territorial secretary shall, upon request, issue to any person whose name is entered in such register a certificate of such entry and of the date thereof, and such certificates shall be sufficient evidence of the facts so certified.

10. Every person who proposes to become entitled to be entered on the register by reason of service of apprenticeship in the Yukon Territory to be performed after the passage of this ordinance shall give notice to the territorial secretary of the fact and file with such secretary a verified copy of his articles of apprenticeship.

11. The secretary shall keep a record of such notices and copies and shall enter no such person in the dental register unless two years have passed since the receipt by the secretary of such notice and copy.

12. Every person whose name is entered in the dental register shall, before the first day of August in each year, produce to him such receipt, signed by the comptroller, showing payment of said fee. The name of such person may be re-entered upon payment of a fee of $25 to the comptroller, and production to the secretary of proof of such payment.

6. Section 13 of said Ordinance is amended by adding thereto the following sub-section :

"(2) The Territorial Secretary upon proof by statutory declaration that any person registered under any of the provisions of this Ordinance is not domiciled in, or a bona fide resident of the Yukon Territory, shall erase the name of such person from the Dental Register and the name of such persons shall not be entered on the Dental Register except under the provisions of sub-section 2 of Section 6 of this Ordinance.

"(3) Before striking off name of any such person the Territorial Secretary shall give written notice to such person by posting, duly registered, addressed to such person at the address left with him by such person, or if no address is left, then at Dawson, Y. T., a statement that such statutory declaration has been made at least twenty days before a date named in such statement. On such date if such person does not appear at the office of the Territorial Secretary by himself or some other person and disprove the allegations contained in such declaration his name shall be struck from the register.

"(4) The decision of the Territorial Secretary shall be final."

14. Subject to the exceptions hereinafter made, no person shall practise dentistry or dental surgery, in any of its several branches, in the Yukon Territory, unless his name is entered in the dental register.

15. Every practitioner who has, after due inquiry, been adjudged by a board appointed by the Commissioner to have been guilty of infamous conduct in any professional respect, or been convicted of any crime punishable by imprisonment in the penitentiary, shall forfeit the right to have his name entered in the register, and his name, if entered, shall be erased from the register and his name shall be published in the Yukon Official Gazette as having been so erased.

17. The secretary shall, on or before the tenth day of August in each year, publish in the Gazette aforesaid a list of the persons whose names are entered in the dental register, and who are entitled to practise dentistry and dental surgery.

18. No person shall be entitled to recover any charge in any court of justice for any professional advice or attendance or for the performance of any operation appertaining to the practice of dentistry or dental surgery or for any surgical or dental appliances which he has supplied, unless his name is registered under this ordinance; but this section shall not apply to duly qualified medical practitioners or to duly qualified druggists or chemists in the course of their practice or business.

19. Every person, whose name is not registered under the

provisions of this ordinance, who practises dentistry or dental surgery, for hire, gain or hope of reward, or wilfully or falsely pretends to be a practitioner of dentistry or dental surgery, or takes or uses any name, title, addition or description implying or calculated to lead people to infer that his name is registered under this ordinance, or professes by public advertisement, card, circular, sign or otherwise to practise dentistry or dental surgery or to give advice therein, or in any wise to lead people to infer that he is qualified to practise dentistry or dental surgery in the Yukon Territory, shall be liable to a penalty of fifty dollars, and every day on which such offence occurs shall be deemed a separate offence.

20. Every person who wilfully procures or attempts to procure his name to be registered under this ordinance by making or producing or causing to be made or produced any false or fraudulent presentation or declaration, either verbally or in writing, and every person knowingly aiding and assisting him therein, shall be liable to a penalty of five hundred dollars.

21. Every penalty under this ordinance shall be recoverable with costs, and may be used for and recovered in the same manner as a private debt by the territorial secretary or by any dental practitioner whose name is registered under this ordinance in the territorial court, and being recovered shall belong to the fund of the Yukon Territory.

22. Upon the trial of any action under the provision of this ordinance the burden of proof as to the right of the defendant to practise dentistry or dental surgery in the Yukon Territory shall be upon the defendant.

24. Nothing in this ordinance shall prevent any person from giving necessary aid to anyone in urgent need of it; provided that such aid is not given for hire or gain, nor giving of such aid made a business or way of gaining a livelihood.

Amendment to Section 3.

Amend sub-section (*b*) of section 3, by adding: "or from any dental college or university having department in any foreign country if the Commissioner deems a diploma a graduation from such last-mentioned college or university a sufficient proof of qualification to practise dentistry or dental surgery."

Selections

A NOTE ON THE RETENTION OF DENTURES.

By William M. Gabriel, M.R.C.S., L.D.S. (Eng.)

It is now generally recognized, I believe, that if possible a mouth should not be rendered edentulous, but that in both jaws two roots should be left and crowned to support the plate.

I have found that while this is good practice when the roots retained are bicuspids or molars; in the case of incisors or canines the ultimate result is apt to prove unsatisfactory. It is, of course, for esthetic reasons, necessary to keep the bands embracing such teeth short, so as to be out of sight, unless, however, the crowned roots are exceptionally firm; after a year or so they are apt to move forward and cease to be closely held by the bands.

A method which I have found somewhat more satisfactory is to fit each root, provided it is of sufficient size to allow of this, with a gold cap and tube, into which a pin attached to the plate fits. The stability with which even one root thus treated will give to an entire denture is surprising to one who has no experience of this method.

The idea is, of course, in no way original or even new, but I think it may serve a useful purpose if I mention one or two points in the construction of such work which the failures I have seen (my own included) have taught me.

In the first place, it is well not to be too hasty in using the forceps, but first of all to fill the apices of the roots it is proposed to utilize.

I can call to mind one case in particular which strongly impressed the advisability of this on me. Having determined to crown the two upper canines, I extracted at once all the other roots, and it was not until I came to fill the apices of the two roots, that I found one was too short for a crown, and that I should have done well to have retained a bicuspid root. Again, there are such things as failures in root filling, so that it is just as well to keep, as it were, two strings to one's bow.

Besides this, there are a few other points upon which I must lay stress, having found them conducive to durability and appearance.

The root having been cut down to the vicinity of the gum margin, but not level with it, it should be trimmed with carborundum or diamond discs, enamel cleavers and strong scalers, and finally with a bur. (Personally I use a shouldered bur made for me by the Dental Manufacturing Company and Hallam & Son.)

Particular care should be taken that this bevelling extends well under the gum in front; otherwise it will be difficult to conceal the gold cap.

A measurement of the root can then be taken with flower wire and a strip of 18k. gold (Ash's gauge No. 4 easy) this length, bound together with binding wire and soldered with a lap joint in the spirit flame.

This can then be gradually forced on to the root, in which process an automatic mallet may sometimes be used to advantage. The line of the margin of the gum being scratched on the gold with a sharp pointed instrument, the gold can be cut away with S.S.W.'s crowning scissors, and the edge bevelled with a fine file till the gold extends evenly under the gum, except in front, where it is best left a trifle deeper than is usually the case in crown work. I prefer not to clean the gold in acid after soldering, as the scratched lines are more easily seen on a discolored surface.

Next, the collar can be cut away with scissors to the level of the root, and both ground down together towards the sides and at the front to the level of the gum. If the bite will allow of the back of root and collar being left a little higher so much the better.

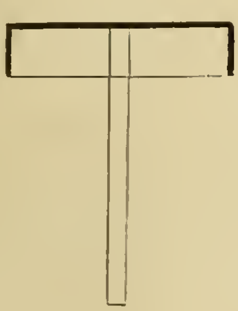


FIG. 1.

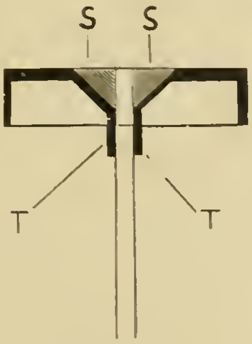


FIG. 2.

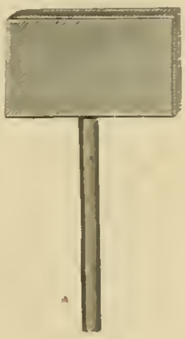


FIG. 3.

The collar is now ready for the top, which it is desirable should be of rather better quality gold, say 22k., and slightly thinner. In this way it is possible to ensure that when it is fitted and burnished to the collar, the shape of the latter will not be distorted, and that moreover it will be easy to force it into a depression to be made in the face of the root as mentioned later.

The top being wired to the collar, is is soldered in a spirit flame and trimmed with scissors, leaving a narrow margin all round. This will prevent any opening of the soldered joint in subsequent soldering and will facilitate removal.

The root can now be carefully enlarged for the tube; passing this through a bur gauge and gradually using fissure burs, etc., till one has been used which fits the particular hole. The tube should be of gold or dental alloy, and fit the pin, which is well to have, if possible, somewhat larger than "pin size."

The orifice of the canal should next be well cut away so as to leave it funnel-shaped. This is a more important point than may appear at first sight, and the need of it was forced upon me by a failure (not my own in this case) which came into my hands. After a couple of years, certainly not more, the solder gave way and the entire cap came off leaving the tube in the root.

Into this funnel-shaped orifice the top is readily burnished, the tube fitted, the whole flushed with solder and filed flat. While adding greatly to the strength of the join this in no way shortens the length of the tube. It is a good plan, I find, not to drill the hole through the top, but to force through it while in position on the root a three or four-sided trochar—one can be conveniently made from a broken reamer or other instrument.

Little tongues of gold (see Fig. 2 T-T) are carried forward when the trochar is pushed through, and grasp the tube so that usually it is possible to remove the two together and solder without investing.

The method of construction, and in what way it differs from that ordinarily pursued, are fairly shown in the accompanying diagrams. (Figs. 1 and 2, S-S being the funnel-shaped depression filled in with solder; and T-T two of the little tongues made by the trochar as mentioned above.)

The pin is now placed temporarily in the tube and the latter cemented to the root.

In taking impressions for dentures supported in this way, plaster is, I think, most desirable and it will be found easier to secure accuracy in the direction of the pins if lengths of German silver or brass wire are prepared fitting the tubes, and with flat pieces of metal rectangular in shape and of appreciable thickness soldered to one end (Fig. 3).

Round these the plaster can be easily broken and they can be replaced in their proper position with far greater certainty than is the case if short pieces of wire alone are used.

It is as well, however, not to trust to the accuracy of this method, but to try each pin separately waxed in position before soldering.

If the plate is to carry only one pin, this can be of uniform thickness throughout; if, however, there are two pins they had better be gradually tapering throughout the greater part of their length.—*Dental Record.*

Dipping the plate into strong vinegar before inserting it in the patient's mouth will prevent any ordinary case of gagging. In extreme cases, bathe the roof of the mouth with a menthol solution applied on a pledget of cotton.—*Dental Summary.*

TOOTHSOME TOPICS

By R. B. Tuller, D.D.S.

J. Dubkin Chumpley, D.D.S.,
Dentist
Fine Gold Fillings a specialty.
Bird Centre.

A professional card.

You've seem 'em like that, haven't you?

Fearing that D.D.S. may be misunderstood or misinterpreted, he makes it plain that he is a dentist.

He's no common, every-day, all-round dentist, but one who makes a specialty of fine gold fillings.

What he does to fill in the time between fine gold fillings he does not say.

The chances are that he, now and then, packs in a "silver" filling or files up and polishes a rubber plate.

But he wants it distinctly understood that he don't do that every day. J. Dubkin Chumpley, D.D.S., Dentist, fine gold fillings a specialty, signifies, as he looks at it, a kind of upper crust dentist.

If you want to see him score set him to work on fine gold fillings.

Great large whoppers, too, that takes hours to insert—with rubber dam *in situ* during the entire operation.

Chumpley may sweat some and his back may be breaking, but he's got endurance—got it, maybe, on the college football team.

Perchance he'll tell the patient that *this filling* is one of the most difficult a dentist is called upon to build.

Only specialists in gold fillings would locate anything so difficult. Common, ordinary dentist would never consider anything but just common, ordinary amalgam in such a place.

And the patient? How does she—most always she—enjoy it?

Methinks I see a bedraggled looking female take a long sigh of relief as she impatiently helps J. Dub. remove the dam. Weary, worn, agonized, nerve-wrecked and half paralyzed, nearly in a state of collapse she departs and thinks, "Heavens! have I got to go through all that again for the one over on the other side?"

Well, she don't have to if Chumpley would just go and get wise on a little inlay work.

There are Chumpleys and Chumpleys, and again Chumpleys plus.

We've all been Chumpleys to a large extent, though we are but common, every-day dentists and do not specialize fine gold work as though the other fellow did not make a *bete noir* of himself in the same old way.

Now, haven't you thought you'd like to do better for your patrons in some way and especially if it could be done in a way not less remunerative and saving time and strain on yourself?

Then why cling so devotedly and persistently to pounding in gold by a long, tedious method, when there is a better way?

A better way? Sure, a better and much easier way—ten times easier for the patient and really nine and nine-tenths times easier for the dentist, possibly, in a large majority of cases.

The trend of progressive thought and action of up-to-date dentists is to eliminate as much as possible the horrors of the dental chair, or to reduce hours of nerve-racking strain and misery to minutes, and send patients away cheerful and not dreading the next engagement like a death sentence.

When you went to college how much more than one way did you learn to fill a tooth with gold?—that one way, malleting in cohesive gold pellet by often taking hours and sometimes the better part of a day?

There are other very satisfactory methods calling for an intimate knowledge of non-cohesive and of crystal gold.

But malleting cohesive gold, by a slow, tedious process, at best, has stood, for years and now, the most approved method of filling teeth, and hence that is taught almost or quite to the exclusion of any other in most colleges; hence the specialist in fine gold fillings.

After some years of regular practice are you always satisfied that every gold filling you put in is a "peach," that is to say, good?

Do you feel that most of them will do what they are mainly intended to do besides looking gaudy—preserve the teeth?

That you "can't teach an old dog new tricks" is an old saw, but no dentist ought to allow himself to be compared to an old dog.

If you are not wise, get wise as soon as you can. The high tide of cohesive gold work for large restorations of decayed and broken down teeth has been reached and passed.

I don't mean to say that the use of cohesive gold for a part of our work is out of date and perhaps never will be, but large and conspicuous restorations will be done in some easier and better way.

Many of you don't like the idea of getting out of the cohesive gold and mallet rut, but you've got to or be classed with Chumpleys, and some day, in the trite but slangy saying, your name will be Dennis, alias Mud.

You must keep up with the procession. Why not get into the band-waggon and be not only in the procession but at the head? MAKE INLAYS.

Don't scowl! Don't howl! You'll have to come to it or drop behind.

Porcelain inlays? Yes, your anterior teeth. And your posterior ones, too, if you want to.

Say, you can set a porcelain inlay on the buccal surface, down under the edge of the gum, perchance, easier than you can put amalgam there.

Now, hold on! Don't get excited. I didn't say make and set the inlay, for it takes some little time to bake up an inlay.

But what I do contend is that you can prepare the cavity with much less cutting, saving your patient and yourself, and when inlay is made it can be placed as easily as anything if made to go exactly to place when pressed in.

And if the cementing has been done properly it will stick and stay and preserve.

While you are doing the baking, sitting at easy posture in your laboratory, your patient is taking it easy reading or has gone out to return as you have agreed upon. When he or she comes back the setting is a very easy matter quickly done, as quick and easy as you'd insert an amalgam filling if you wish.

Porcelain inlays require some delicate skill and a good deal of painstaking effort in most cases, not to mention artistic taste and ability in shading and contouring; and, yes, after all they *sometimes come out.*

Great Peter!—out?

Aye, 'tis true; they do. But take a little retrospect along those fine gold fillings you put in. Did any ever come out? Did any ever fail to protect though they staid in for a few months? Did the work you did after you perchance became a specialist in fine gold fillings always preserve.

What? Do you mean to say some came out? And some failed? Well, yes, of course; but, gee whiz! an inlay, why, an inlay should never have a fault.

Well, they don't have many—if the cavity is made right—if the inlay is made right—if it is set right.

The average gold filling is not a good filling, because it does not preserve, though it may stick in a long time.

The average inlay—one not the very finest fit possible and not exactly correct in shade or contour—well, if it stays in, preserves, and it will stay in if conditions have been made right, same as a gold filling will stay in if conditions peculiar to such work have been made right.

When one has become familiar with inlay work as he is with gold filling his work will stand with equal or even greater certainty.

Don't you remember your miserable failures in your first cohesive gold work and even after you became quite expert?

But the purpose of this topic this time is not to give special pointers about porcelain inlays, but rather to emphasize the value of inlays, so logical and correct and artistic and durable when made correctly, and their special value in reducing, if not entirely eliminating, some of the terrors of the dental chair.

All I have said applies as well to gold inlays except as regards color. The display of glittering, gaudy gold is becoming more and more objectionable to refined tastes, and therefore porcelain is above gold in the esthetic sense, but gold inlays will preserve and they can be made exceptionally strong for masticating service in posterior teeth.

Gold inlays have been made for a good many years and have done everything expected of them. The process of making them seems to some a little difficult and complicated, but anyone who can make a good cohesive gold filling or a gold crown ought to soon turn his hand to making an inlay.

I have a method, original with me, which I would like to tell you about, and when once you are familiar with it by trying to make a few in teeth set in plaster you can save a lot of time and trouble in many cases. When you become expert you can save fully two-thirds or three-fourths the time it ordinarily takes to build up large cohesive gold fillings.

The cavity must be prepared with no under cuts. If any they must be filled with cement and walls left smooth and sloping slightly outward. The margins may be bevelled, same as for gold fillings. (The contrary is the case with porcelain—margins must be square.) In other words, the cavity must be made so that an impression of it would draw freely without dragging or distorting the material used.

In this process I take the impression in gold.

I will describe the process of making an inlay by my method of a simple large bowl-shaped cavity in a lower molar, for instance.

Supposing cavity to be all ready I take a third or one-half a sheet of non-cohesive gold (cohesive doesn't work so easily) and fold it over and over on itself until I have a square about the size of the top of tooth. Laying it over the cavity, which may be moist, I force it to the bottom with a little ball of cotton, then expand it to the walls and fit it carefully over the margins and into all fissures or recesses described by surface within margin of cavity. Into this I pack a wad of crystal gold—enough to fill it comfortably, treating it as I would so much putty. Now let patient bit on it. Pack down or add more as may be indicated. Especial pains is to be made to fit with some firmness all around the margin, carrying to the bottom of every pit and fissure it is supposed to occupy when finished.

To remove it from tooth, take hold of the overlapping gold foil with pliers and gently coax it out. Put it bottom up on a piece of glass, flow investment over it, just a thin layer. When that is hard turn top up and on a wire screen hold it over Bunsen flame, put on 18 or 20k. solder and draw it down through till filled full, which will easily show. After trimming off surplus around margin it may be ground and finished a good bit, if not altogether, before setting, care being taken to not injure margins. I find my cutting pliers hold it best while finishing. Now put in cavity and burnish down margins, and after scoring the back to give hold for cement it is ready to set.

Wash out cavity and dry thoroughly and keep dry and then mix cement and set. Wipe away surplus cement and force down hard. A hot burnisher will hurry the crystallization of cement. Edges should again be burnished down close. After a few moments, paraffin may be made to flow over the margins and the work is done.

The time taken to make this inlay is, in expert hands, not over fifteen or twenty minutes if everything is ready and convenient to work quickly.

Caution is needed, if a blow-pipe flame is used in soldering or the foil and crystal gold may be melted. I use most always a low Bunsen flame. Flux should be cautiously used too.

Now I have made some of these crystal gold inlays by packing the cavity without a matrix except a strip of thin gold laid in first to lift it out by and have soldered it without inverting at all, though it is best to. Cover all but top with a coating of whiting and water. This is a quicker way still for simple cavities, but it takes experience to know just how to handle it and not melt a thin edge or run solder where not wanted—*American Dental Journal.*

DR. BROPHY ADDRESSING THE DENTAL STUDENTS OF BUFFALO UNIVERSITY.

There is no vocation which calls for a broader knowledge than does dentistry, reaching out as it does and claiming from the arts and sciences their choicest products and appropriating them to its use. When the Baltimore College of Dental Surgery was organized in 1839 the nucleus of a great profession was formed; with this movement the dental profession as an organized body had its birth, and while it depends to some extent upon the teachers and teaching in medicine, it is not, strictly speaking, so much a department of medicine as many who have not weighed well the subject would have us think. Custom often makes mental impressions which logic removes with difficulty. There are certain branches of learning which are sciences *per se*, parts of which are essential in the laying of a foundation for the study of medicine, but they are not by any means exclusive branches of medicine. These sciences must be studied by men in other professions than medicine that the student may understand the principles underlying his vocation. The pharmacist must know chemistry, both organic and inorganic. The engineer must understand physics and the laws governing the application of force. The sculptor must know the outlines of anatomy or his work will be a failure. The naturalist must be well grounded in physiology as the foundation upon which his profession rests.

"Biology is a science which treats of the nature and properties of living matter and of living beings."

"Physics is a study of the phenomena of bodies and of the forces acting upon them, excluding those acting on atoms, which pertain to chemistry."

"Chemistry is a science treating of the mutual interaction of elements and of their compounds; the art of identifying or ascertaining the composition of substances presented for analysis."

"Physiology is the doctrine of the vital phenomena of organisms and their relation to chemical and physical laws."

"Anatomy is the science treating of the structure of organized bodies; it may be vegetable, animal or human."

These sciences are not medical, nor are they in the broadest sense departments of medicine. Mathematics is employed in medical teaching and practice, but no one would claim that this science is a department of medicine. Medicine extracts from them as much as it requires to prepare her students for the duties of practitioners. The dental college likewise draws from the arts and sciences named and employs the knowledge thus acquired in building and developing the student into the skilful and successful practitioner.

Dentistry is a profession embracing a knowledge of:

First. Physics, Chemistry, Anatomy, Histology, Metallurgy, Physiology and Bacteriology.

Second. Its practice requires a high degree of digital skill, manual dexterity and technology, and an accurate knowledge of mechanical principles and the fundamental laws upon which they are based.

Third. A thorough knowledge of the physical and chemical properties of all the minerals and metals and their various dental uses.

Fourth. A knowledge of Materia Medica; Therapeutics, general and special; Pathology; Physical Diagnosis and Principles of Surgery and Oral Surgery.

Fifth. Operative and Prosthetic Dentistry and Orthodontia.

Under five heads it will be seen that the strictly medical subjects are included in number four.

It is fair to state that dentistry is divided into five parts for consideration and study, one of which parts is medical. Whoever would attain the highest degree of success in the dental profession must keep in mind the necessity of being well grounded in the sciences named, or as much of them as underlie the principles and practice of dentistry.

As a sequence to the foregoing statement and in view of the fact that the art side of dentistry embraces a large part of dental practice, we believe that dentistry is a profession *per se*, and that the dental faculties of the institutions of our country will be held responsible for the proper equipment of their students for the duties of dental practitioners.

COMMENT ON DR. MAGEE'S ROOT FILLINGS AS PUBLISHED IN THE NOVEMBER "DOMINION DENTAL JOURNAL."

We publish in this issue two interesting communications on the subject of root filling. At the first meeting of the Canadian Dental Association Dr. James Magee declared that molar roots can be filled to their apices in the majority of cases. Dr. McInnis challenged his claim and the result of the test is recorded in the report with skiagraphs made by Dr. Weston A. Price. Dr. Magee gives us his comments. It is an undisputed tenet in dental practice that after the removal of pulp tissue the root canals should be aseptically sealed throughout in order to preserve the tooth in a state of health. It is therefore of tremendous importance that the technique of root filling should be thoroughly mastered by those who wish to be successful practitioners. That the operation is neither simple nor easy is proven by the fact that there is perhaps more literature upon this than on any other topic in dentistry. The present papers bring up the discussion in a new and most interesting aspect. Too much credit can hardly be extended to Dr. Magee for his willingness to have his operations subjected to criticism under the impartial light of the X-ray. Dr. Magee claimed that he could fill the majority of molar roots to their apices. In the test made he failed. Yet he is still confident of his ability and attributes his failure in part to the conditions under which the test was conducted.

Let us then consider the conditions, and discuss the value of the test. The teeth were imbedded in plaster-of-Paris. This proved a disadvantage because the investment absorbed the solvent upon which Dr. Magee in a measure relied for carrying his gutta percha to the apices. Again we learn that the plaster interfered with the skiagraphing. It is clear therefore that it was a mistake to have so invested the teeth.

Dr. Magee also says, "In the mouth we know by sensation when we reach living tissue, and having reached it we dare not go farther." This is true only to a degree. In dealing with roots from which living or partly devitalized pulp is to be removed pain of course is met; but in the presence of dead or putrescent canal contents, sensation would only be noted in one of two instances: First, in using canal drills pain might be observed prior to actual puncture, but if, as suggested by Dr. Magee, he would then "dare go no farther," the apex of his root would be no better filled in the mouth than in those teeth punctured by him in his tests. Secondly, we would meet sensation by passing a probe through the apex, but it is probable that this would only be true in the presence of a highly sensitive pericementum, made so from inflammation or abscess, or in case the probe be passed much farther than it should be beyond the actual apical foramen. A deft touch should indicate the arrival at the apex without passing through to a degree sufficient to cause pain, in the absence of acute pathological disturbance; but while this might be true in the mouth, it probably could not be accomplished where the foramen abutted plaster-of-Paris.

Three points remain to be discussed: First, the puncturing of side walls; second, the detection of the apical foramen from within the canal; and, lastly, the cleansing of the canal.

Puncturing Canal Walls.—The chief value of the test lies in the large proportion of roots punctured. While it is true that, in the mouth, the pain felt just prior to the actual puncture might have allowed the operator to save himself from this disaster, it has been pointed out that he would have been no nearer to a perfect root filling from this fact. Dr. Magee dismisses this aspect of the question by saying, "I will not make excuses for the punctures, because no honest dentist will even claim total exemption from that mishap." This is true, of course, but where it has occurred it has been indeed a mishap, and moreover, in most cases showed a lack of skill. It is the sort of accident which occurs to men early in their professional careers. It is inexcusable on the part of one who would claim skill enough to fill all molar roots to their apices. The truth is, that while we are told nothing of Dr. Magee's technique, it is probable from his results that he used some sort of canal drill or reamer. Time was when the present writer thought a reamer an important and necessary instrument, and it was during that period that he occasionally had the mishap of puncturing a root wall. With the adoption of the Schrier method of canal cleansing (sodium and potassium) the canal reamers were relegated to the bottom drawer of the cabinet, to be used but rarely and then only at the opening of a canal. By this method the canal can be more thoroughly and more certainly cleaned throughout, and the puncturing of a root wall becomes an impossibility. The canal reamer, moreover, is a fruitful source of another danger; while opening the upper two-thirds of a canal it frequently carries debris forward and so tightly closes the rest of the canal that further cleansing is impossible. Thus if Dr. Magee used reamers in all of the roots, it accounts not alone for the punctures, but perhaps for some of the unfilled root ends.

Finding the Foramen.—If a canal is properly cleansed, using either the Schrier or the Callahan methods, which means removing the canal contents chemically rather than mechanically, the arrival at the apex can be noted by the fact that the delicate end of the canal probe first rests at the opening and then with extra pressure can be forced just through. Pain is not a needed exponent of this fact. But the tissue beyond the apex should be as it is in the mouth, cancellous bone. For this reason a better mode of conducting another test would be to obtain a fresh piece of beef bone sawed so that the human tooth roots may be forced into the cancellous portion thereof. It was in this manner that the writer perfected himself in forming sockets for tooth implantation, the beef bone being quite similar to the tissues in the mouth. By this means also would be avoided the absorption of the solvent.

Cleansing the Canal.—Dr. Price's report shows that in several instances the upper portion of the root canals remained unfilled. Unfortunately we are not told whether these places were properly cleaned or not. It is probable that they were not, if Dr. Magee relied solely on mechanical cleansing, and chemical cleansing might have been inoperative in dried specimens. It follows therefore that in another test, the teeth should be as fresh as possible. Dr. Magee's idea that the teeth should be extracted under protest is hardly logical. We often attempt to save teeth, under protest, teeth which we know would by the majority be relegated to the forceps; and it is just in proportion to our skill in saving this class of teeth that our root filling methods should be tested. A tyro can fill an easy root canal. It is the other sort that we are all interested in learning how to control.

May we hope that Dr. Magee will undertake another test, using freshly extracted teeth embedded in beef bone.—Editorial. *Items of Interest.*

A FEW LITTLE POINTERS.

By Stewart J. Spence, Chattanooga, Tenn.

A New Use for the Back-Action End of the Automatic Mallet.

For over twenty years I used one of these double-action mallets without knowing what that back-action end was for. Of course, when I bought it the smiling salesman told me it was to work around corners; but I soon found this to be a pleasant fiction. I know now. I screw a foot-shaped plugger into that back end, and use it with straight pressure and no blow, and find it exceedingly useful as an aid in filling approximal cavities; especially where gold has to be pressed against enamel, which is so liable to crack under the blow of the mallet.

Curving the Donaldson Pulp-Canal Cleanser.

We know that these broaches are made some long, to be used straight in the broach carrier, and others short, to be used at a right angle. I have almost entirely discontinued the use of both these ways, finding that to bend the cleanser into curve, after having fixed it in the carrier straight with the handle, makes it more easily applied to most canals, and that when so bent, and then rotated in the canal, it is forced against the sides of the canal better than when used straight.

Polishing the Back of the Mouth Mirror.

This will aid in throwing light upon a tooth; as when the face of the mirror is turned to the cheek in the act of drawing it aside.

To Prevent Water from Gushing out of the Mouth while Syringing.

Ask the patient to close his lips, or, easier yet, hold the mouth-mirror so that the stream dashes against it and is turned back into the mouth.

To Catch Syringed Water when the Dam is on.

Frequently two sponges act better than one; one being placed on the labial, and the other on the lingual side of the tooth.—*Dental Summary.*

BAD TEETH AND CANCER.

"Qualified Chemist" writes to the *Western Mail*:—Your note in to-day's *Western Mail*, respecting bad teeth and their connection with the cancer is only part of the case. Why should men and women have bad teeth?

As a chemist of many years' experience I suggest the initial cause to be found in the children's powders. Practically all the working-class women dose their babies twice a week with these powders Now all (or practically all) these powders contain mercury, and its injurious action on the teeth is well known. Can it then be wondered at that these children should grow up with diseased teeth? No middle-class mother would permit her child to be thus dosed, but the working classes worship quackery and are never happier than when taking some course of so-called patent medicine, and, as they start on their babies, the whole raceis being physically weakened; as shown by the Government Army returns, the standard is not being maintained. I believe the craze of the working classes for patent quackery is the unsuspected cause of many of the newer forms of disease specially among women. The 1½d. stamp placed on all the quack medicines, so far from being a danger signal, has deluded the people into a false sense of security, believing that it is a government guarantee that the medicine it covers is safe to use.

My advice to the public is that before laying in a fresh supply of their favorite patent medicine they should just ask their doctor or chemist for their opinion in the case, and before permitting their babies to be dosed every mother should seriously consider the necessity of such treatment and even if the baby really requires medicines, abstain from giving mercury powders and save the teeth from ruin.—*British Journal of Dental Science.*

MODELLING COMPOUND AND WAX.

By C. H. Gerrish, Exeter, N.H.

After you have used a piece of old modelling compound for about twenty years it will take a better, sharper impression than anything I know of. This was my idea of it until I went to make a set of teeth for myself. I looked at that old piece of modelling compound, and I said to myself, Can you put that in your mouth? I decided I could not, so I got a new piece for my own mouth, and since then I have not put in my patient's mouth what I would not put in my own. And that is a good golden rule for the dental office: Never put in your patient's mouth anything you would not put in your own.—*Cosmos.*

Proceedings of Dental Societies

ONTARIO DENTAL SOCIETY.

The Ontario Dental Society meets February 8th, 9th and 10th, in the College building, Toronto. Features of the meeting will be the discussion of porcelain, therapeutics, anesthetics and the clinics. Each clinician will be expected to describe his clinic to the whole society, and, after its performance, to have it discussed. The programme is almost completed, and will be issued shortly. This year's meeting will be larger and better than its predecessor. The Ontario Society is a factor in dentistry in Canada.

BRANT COUNTY DENTAL SOCIETY.

At the last meeting of the Brant County Dental Society the following officers were elected for the ensuing year: Dr. John Mills, Hon. President; Frank Britton, D.D.S., President; A. Almon Babcock, Secretary. Arrangements are progressing for the entertainment of our brother practitioners at the convention to be held here next summer.

A. ALMON BABCOCK, *Secretary.*

REPORT OF SECRETARY OF THE NORTH-WEST DENTAL ASSOCIATION.

MOOSE JAW, N.W.T., Nov. 23rd, 1903.

Dear Doctor,—The Lieutenant Governor, by and with the advice and consent of the Legislative Assembly of these Territories, assented to a new Dental Ordinance, November 21st. (The preceding Ordinance was entirely repealed.) Instead of, as formerly, "The North-West Territories Dental Association," we are now known as "The College of Dental Surgeons of the North-West Territories."

Under the old law, in any prosecution for illegal practising, the burden of proof was on the Secretary; also, costs of prosecution were on the Association. The fine, if any, went to the government. This caused, in numerous instances, loss of practice to the Secretary and additional expense to the Association. Under the new Ordinance, the "burden of proof" is upon the person charged; also costs of prosecution. The fine goes to the College.

Illegal practising has been openly conducted in certain districts. This state of affairs, in certain instances, was allowed to continue owing to the extreme difficulty of proving illegality of practice, and the great expense the Association was put to in carrying on the prosecution. Two instances, just to illustrate: A person proven to be illegally practising was fined two dollars. The Association's costs amounted to eighty-six dollars. The other person charged left the country after the Association had spent some sixty dollars in prosecuting. He was not even fined.

We have had numerous prosecutions with similar results. Little wonder persons prosecuted would continue practising. The new law changes all this. A full and complete copy of this law will be sent to you as soon as printed.

You will find enclosed statement of finances of the Association as they now stand after having been carefully audited by the Auditing Committee appointed by the Association at its annual meeting, April, 1902.

Yours truly,

P. F. SIZE, *Secretary.*

FINAL STATEMENT OF FINANCES.

September 1st, 1902.

Balance on hand		$ 54 07
Association and Board meetings	$ 185 55	
Secretary of Dental Association expenses	303 90	
Lithographing and printing	231 60	
Legal fees	266 30	
Stamps *re* mail	63 72	
Fees returned	198 00	
Fees received		1610 00
Balance on hand	415 00	
	$1664 07	1664 07

Auditing Committee,

DR. D. D. ROSS.
DR. L. E. GEISER.

The above balance, four hundred and fifteen dollars, was forwarded by cheque to John A. Reid, Clerk Executive Council, as per order-in-council..

P. F. SIZE.

MOOSE JAW, December 9th, 1903.

FRATERNAL DENTAL SOCIETY OF ST. LOUIS.

The Fraternal Dental Society of St. Louis, at the December meeting, elected the following officers for 1904: Dr. E. E. Havenstick, President; Dr. W. E. Brown, Vice-President; Dr. E. P. Dameron, Rec. Sec.; Dr. J. A. Field, Cor. Sec.; Dr. S. T. Bassett, Treas.; Drs. B. L. Thorpe, W. L. Whipple, and G. A. Motthar, Executive Committee.

Correspondence

ROOT FILLING.

To the Editor of DOMINION DENTAL JOURNAL:

DEAR SIR,—For root canal filling I have had the best success with oxychloride of zinc, mixed thin, well worked into canals, into which is pressed a gutta-percha point, which, besides filling the canal more perfectly, leaves a way of getting in for treatment should occasion arise. So far I have never had occasion to open one so filled.

Yours sincerely,

T. L. HALLETT.

ST. JOHNS, NFLD., November 17th, 1903.

W. D. COWAN, L.D.S.

DEAR SIR,—Enclosed you will find copy of recent amendments to dental ordinance. I am sure that you will be pleased to find that we now have a fairly good dental law. I had to appear before the Council on three different occasions and argue the different amendments. The last amendment, or the residential clause, is to catch the summer birds, who come in from the Coast States, practise during the summer months, and depart when things grow dull. Let me ask you to be careful in admitting any one from the Western States. They are, I think, without exception, advertising fakirs, utterly devoid of any professional honor, and a discredit to the profession.

The Commissioner appointed Dr. J. D. Bell and myself on the examining board with power to add to our number.

Trusting you are well, and wishing you all possible success.

I am, yours, as ever,

A. J. GILLIS.

DAWSON CITY.

Review

Carl Wedls' Pathology of the Teeth. Volume II. Second edition. Edited by Dr. Ritter Von Metnik and Dr. Geo. Ritter Von Wunschheim. Published by Arthur Felix. Leipzig.

This volume is fully up to the standard of Volume I. The author commences in the first chapter with a history of caries of teeth, from the earliest date up to the present time, citing different authors and their ideas of the cause of it. He then treats on the appearance of caries of the enamel, the dentine, and the frequency of it, and ends the chapter with an explanation on the theory of caries. Chapter II. deals very exhaustively with pulpitis. Chapter III., on periodontitis, pyorrhea alveolaris and alveolar abscess, deserves special mention. The subjects are treated in a masterly manner and show that the author is thoroughly conversant with the subjects. Chapter IV. describes periostitis, diseases of the nasal fossa, of the antrum of Highmore, of the gums, and such as are caused by first and second dentition. In Chapters V. and VI. are explained atrophy and hypertrophy and all the complications arising therefrom. Chapter VII. is on neoplasm, in all its varied forms that are observed by the practitioner. This is the longest chapter in the book, and shows that the author has spent a great deal of time in research work in getting it up. Chapters VIII. to XIII. are devoted to rachitis, actinomycosis, saliva, sordes on the teeth, salivary calculus and neurosis. It is difficult to point out the best and most interesting chapter in the book, as the subjects in all are well handled and reflect great credit on the author. It should be an acquisition to our English literature if the work were translated into that language. Typographically it is well gotten up, printed on good paper with a clear type and well illustrated. Carl E. Klotz.

Directory of Official and Voluntary Dental Associations and Societies of Canada

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Secretary—Geo. K. Thomson, D.D.S., Halifax, N.S.

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President—Dr. J. F. McDonald, Summerside, P.E.I.
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VOLUNTARY

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President—C. F. Morison, D.D.S., 14 Phillips Square, Montreal, Que.

Secretary—F. W. McKenna, D.D.S., Montreal, Que.

The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
93 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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VOL. XVI. TORONTO, JANUARY, 1904. No. 1.

AMENDED DENTAL ORDINANCE YUKON TERRITORY.

In this issue appears the Amended Dental Ordinance of the Yukon Territory. The amendments were assented to October 16th, 1903. The original ordinance was defective in many respects, chiefly in making the Commissioner the prophet, priest, and king of the profession. It is all changed now. The profession undertakes its proper duty. There is a board appointed by the Commissioner which takes charge of all matters relating to the profession in the Yukon. There is still the defect of the appointment of the board being in the hands of the Commissioner. No doubt this objectionable feature will be righted in a year or so. Dental boards should be elected by the profession, their acts being under the veto power of the State. The amended act provides that no foreigner can register without compliance with a curriculum, and passing an examination. This is aimed at the "summer birds" from the Western States, who do not always act in the most professional manner during their summer vacations in the Yukon. Canadian or British dentists, who hold a degree or license, may register without an examination.

PROPOSED NEW MEDICAL FEE BILL AND A DENTAL NOTICE.

There are those among the medical profession in Ontario who are just now advocating very strongly the introduction of a fee bill, which will be given the sanction of the Legislature at its next session. Under it a physician's fees may be taxed, as sometimes the lawyer's are. It may be the desire to have the lowest possible fee for a certain service a fixed one, but it is doubtful if any legislative body would make such a law. In case the *Dominion Medical Monthly* succeeds in what it advocates, a physician's account will read as follows:

Toronto, Jan. 15, 1904.

Mr. Robert Roe

In Account with **J. O. ORR, M.D.**

	$	c
To Gas used in boiling 3 pints of water - -		2
Washing hands (including soap) - - - -		2
1 drachm carbolic acid - - - - -		5
6 inches silk-worm gut - - - - - -		8
Cleaning seat of operation - - - - -		10
Inserting 4 interrupted sutures - - -	2	00
Dusting powder - - - - - -		2
Applying dressing and bandage - - - -		50
Telling patient to keep the limb in an elevated position and not to walk - - - -	4	00
Total - - - - -	6	79

How would it look to have the following printed on a large card, and hung in a conspicuous place in the reception-room of a dental office? We invite comment.

Notice to Customers

WE, the undersigned Dentists of Gibraltar agree, under penalty of Fifty Dollars if broken, to close our places of business every Monday afternoon from 1 p.m. until 6.30 p.m. during the months of April, May, June and July. We further agree, under the same penalties, if broken, to charge the same prices for work.

PRICE LIST

Full Sets, Rubber	**$18.00**
(Partial Sets, $4 for one tooth, and $2 for each extra tooth until $18 is reached.)	
Gold Sets.	**$30.00 up.**
(according to the amount of gold used)	
Aluminum Sets	$25.00
Gold Crowns	12.00
Richmond Crowns	15.00
Bridgework	10.00 a tooth.
Gold Fillings	2.00 and up.
Silver Fillings	1.00 "
Bone Fillings	1.00 "

TERMS CASH.

AN ORDINANCE RESPECTING DENTISTRY IN THE NORTH-WEST TERRITORIES.

We publish the full text of the Dental Law of the North-West Territories in this issue. There has been much uncertainty in regard to the dental law of the Territories for the past two years. The old law was very unsatisfactory. The council, the profession, the Legislature, and the public were dissatisfied. But out of this dissatisfaction and criticism has developed the best dental law that we chance to know anything about. It contains few, if any, of the bad features of other dental laws, while it has all the best features of any extant, and besides, introduces several new and very desirable features. It was worth while waiting and tolerating the old law until a more perfect one matured. Too great credit cannot be given those who suggested and assisted in getting the assent to this law. The master hand of some one was certainly behind all this. It shows a breadth of view, and an anticipation of the future of the profession in the Territories, in Canada, and in the Empire. It provides for interprovincial registration, and Dominion registration, and Imperial registration. Graduates of Canadian dental colleges may register without examination. Those of foreign colleges must have taken four courses, and their diplomas must qualify them without further examination to practise in the state or country in which the diploma was obtained.

Every dentist who has had any interest in his profession, should read the whole Act, but we wish to call attention to a few special features. There will be a council of five, elected by those of the profession who have paid their fees, which are due on the 1st January in each year. No fees can be accepted to make good a qualification to vote within thirty days of an election. This is a wise provision, because there will not be such a likelihood of candidates paying the fees to get votes as has sometimes occurred in other provinces. But there does not seem to be any provision for the collection of the fees from those who refuse to pay. It does not pay to sue for two dollars or even ten dollars. As occurs in Ontario, about one-third of the profession pay their fees, and do the voting, while the board stands with three or four thousand dollars due it by the profession. Such a condition is certain to occur unless there is more punishment than disfranchisement for non-payment of fees. Overdue fees might be doubled every year until paid, which would soon make an amount worth suing for, or erase the name from the register. No nominations are necessary, everybody votes for anybody he chooses, and those who receive the highest number of votes are elected—a wise provision. It is surely a mistake to allow the secretary to see the ballots. The two disinterested scrutineers are enough. Such would hardly be a secret ballot.

The council has full power to discipline its members. The name of anyone who is guilty of infamous conduct in a professional respect will be erased from the register. The council has the power to conduct an inquiry and take evidence under oath. The defendant may demand a new trial before a judge of the Supreme Court. Under such a law quacks will not flourish. Unregistered persons cannot practise dentistry nor pretend that they are dentists without taking the risk of being fined $100.

Editorial Notes

Dr. G. E. Matheson, of Winnipeg, spent the holiday season at Belleville, Ontario.

Drs. Armstrong, Washington, and J. S. Miller, of the Territories, are visiting friends in Ontario.

The Antikamnia Chemical Company has again sent out a very pretty calendar to every dentist in the world.

Dr. Park Lowes, in a paper read before the Orthodontists' Society, expressed the opinion, based upon observation, that defective sight may often be a direct result of marked irregularities of the teeth. Defective sight is nearly always associated with asymmetry of the head and face.

Culture is not book-learning, nor an English accent, nor a superciliousness toward the routine of daily life, nor a contempt for the masses, nor an aversion to human contacts, but simply an attitude of mind, an accessibility to the best things and the most refining sentiments, which a garbage man may as well, though not as probably, enjoy as a master of arts or a doctor of philosophy.

Drs. J. B. Willmott, W. E. Willmott Harold Clark, W. C. Trotter, A. E. Webster, and Edward C. Abbott, of the Staff of the R.C.D.S., and H. R. Abbott, London, President of the Board of the R.C.D.S., attended the meeting of the Dental Pedagogic Association at Buffalo during the holidays. The American Society of Orthodontists held its annual meeting in Buffalo the last three days of the week in which the Pedagogic Association met.

Obituary

MR. WILLIAM ASH.

We regret to announce that Mr. William Ash, the youngest son of Claudius Ash, founder of the firm of Claudius Ash & Sons, died at his London residence, Tower House, Camden Road, N.W., on Thursday, November 19th, in his eighty-fifth year. Born in the parish of St. James's, Westminster, on the 18th of April, 1819, he was educated in London, and in due course joined his father and his brothers, George Claudius and Edward in business.

For nearly sixty years Mr. William Ash was a familiar figure at Broad Street, and all who remember him will recall his kindly and urbane manner. He ceased to take an active part in the business abont ten years ago.

In addition to the business side of his life, Mr. William Ash was deeply interested in the dental profession, and was very closely associated with the Dental Hospital of London from its inception. For a great many years he was an active member of the Committee of that institution, and took a prominent part in its removal from Soho Square to Leicester Square, the result of a proposal by Mr., after Sir Edwin, Saunders. At the annual general meeting of the governors of the Hospital in 1873, Mr. Ash proposed an alternative to the Saunders' plan. "His idea was to build suitable premises, rather than to convert old ones into the nearest approach to convenience they would allow. At considerable trouble, he had procured plans and drawings in connection with sites to be obtained from the Metropolitan Board of Works, on which a hospital could be erected, adapted in all points to the requirements of the managing and medical staff, the students, and also the Odontological Society. . . . His proposal was discussed, but eventually the decision was given in favor of the original plan."*

Soon after his twenty-first birthday, Mr. William Ash married Sarah, the daughter of Mr. James Matchwick, of Guildford, Surrey, who predeceased him by only sixteen days.

Three years ago a stained glass window was inserted in the church at Heathfield, Sussex, in which parish Mr. Ash had a country residence, as a thank-offering, and in commemoration of his diamond jubilee.

Mr. William Ash leaves three sons and three daughters. Of the sons, William Henry and Claudius James are at present the senior directors of the firm of Claudius Ash & Sons, Limited.

The funeral took place on Monday, November 23rd, at Highgate Cemetery, and was largely attended by members, relatives and friends of the family, also by many of the employees at Broad Street, and some of the factory, Kentish Town.

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*"Hill's History of the Reform Movement in the Dental Profession in Great Britain," p. 237.

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Original Communications

TUBERCULOUS GLANDS OF THE NECK AND THEIR RELATION TO DENTAL CARIES, WITH SOME OBSERVATIONS ON THE NATURE OF TUBERCULOUS ABSCESSES.

BY A. PRIMROSE, M.B. C.M. EDIN., M.R.C.S. ENG.

Professor of Anatomy and Associate-Professor of Clinical Surgery in the University of Toronto, Professor of Physiology in the Royal College of Dental Surgeons.

Read before the Toronto Dental Society.

Tuberculous infection of the glands of the neck commonly occurs from absorption of bacilli from the mucous membranes whose lymphatics pass to the group of cervical lymph glands implicated. The immediate source of infection is, at times, the mouth cavity, and the surgeon is not infrequently called upon to operate on the glands which receive their afferent lymphatics from that source. Thus one finds the sub-maxillary, or the sub-mental group of lymph glands becoming the seat of tuberculous infection with a fair degree of frequency. Here, as elsewhere, the line of treatment which is to be advocated for tuberculous adenitis is free excision where the glands are accessible. Experience has undoubtedly shown that the safest procedure is to remove the diseased glands. The removal may be a very simple matter or a dangerous and complicated operation may be necessary. The course which a case runs subsequent to operation will depend largely upon whether or not mixed infection of the glands or the wound has occurred. If there has been mixed infection then a prolonged, painful and tedious convalescence is to be predicted, and there is too the danger of septic poisoning of a general character supervening which may endanger the life of the individual. On the other hand, if the glands be infected with the bacilli of tubercle only, and mixed infection has been prevented during the operation, then speedy and complete recovery is secured. We must not imagine that mixed infection occurs only at the time of operation, or immediately succeeding it, but a tuberculous gland is liable to become the seat of mixed infection at any time. Consequently an individual who is suffering from enlarged glands which are thought to be tuberculous, must be placed under the best conditions to minimise as much as possible this danger. I consider that the most likely source of mixed infection in cervical adenitis is the buccal cavity, and more particularly in the presence of dental caries, and for this reason I venture to bring the subject before the Toronto Dental Society this evening.

In order to make my point clear it will be necessary to consider the pathology of tuberculous adenitis and the formation of an abscess with and without mixed infection. First, let us consider the purely tuberculous process as it presents itself in a lymph gland.

The gross pathological appearances vary greatly, we usually find, in uncomplicated cases, ovoid masses of varying size and with a consistence much firmer than the normal gland. At times the enlarged gland becomes softened, but this softening does not appear to have any definite ratio to the size attained; thus I could show you glands which I have removed from the neck, an inch and a half long, in which no softening has taken place while, on the other hand, glands of very much smaller size may be soft and fluctuating. When a gland becomes tuberculous, there is always an attendant process of inflammation of a low, non-specific type surrounding the infected area. This condition is found in all tuberculous processes, glandular or otherwise and is due to the fact that the tuberculous focus acts as an irritant on the tissues in the neighborhood. Whilst this inflammatory area, to start with, is non-specific in character, it is very prone to become infected with pyogenic microbes, and then, when septic infection has thus occurred, the whole clinical aspect of the case is changed. Then again the peri-adenoid inflammation leads to the formation of adhesions to the surrounding structures, and thus arises a condition which makes operation for removal difficult ; we occasionally have to dissect off important nerves and blood vessels, which have become adherent in this way. Pus may form within the gland capsule, round about the tuberculous focus, or, what is more common, it forms without the capsule in the tissues, which have become involved in a periadenitis. The gland may be become wholly destroyed in the suppurative process, so that occasionally no trace of the glandular tissue is recognizable. The caseous material found in the gland is simply necrotic debris and this, too, not infrequently replaces the glandular tissue. The capsule of the gland in all cases of tuberculous infection becomes thickened. Considerable enlargement of the glands, and even the formation of an abscess may occur in purely tuberculous cases without mixed infection. Exception has been taken by some authorities to the term "tuberculous pus," and it is true that the so-called "pus" of a tuberculous abscess differs in many respects from the pus which is the result of the activities of true "pyogenic" microbes. We need not discuss the point here, but it is essential to emphasize the fact that the pus of a tuberculous abscess is frequently absolutely sterile, there being an absence even of the bacillus of tubercle itself in the fluid obtained from such a source in many cases. Again this fluid, whether containing tubercle bacilli or not, readily becomes septic and forms an excellent nidus for the growth of pyogenic organisms. All our efforts in treatment are directed towards an attempt to prevent such mixed infection.

The histological characters of a tuberculous gland are very striking. If a thin section which has been prepared for microscope examination and mounted on a slide, be held up to the light, we observe a characteristic mottled appearance, due to isolated collections of epitheloid cells. This appearance is very suggestive of the tuberculous process, and if such a section be compared with one obtained from a gland in a case of lymphadenoma, we find the uniform appearance of the section in the latter case appears in marked contrast with the mottled appearance of the former. The gland which is infected with tubercle tends to caseate sooner or later; then the central portion of the caseous mass tends to liquefy, and thus you have the beginning of the tuberculous abscess. The appearance of a section of such a gland under the microscope may be described as follows: The capsule is markedly thickened, and immediately under this thickened capsule is the region in which the tuberculous process is actively going on, or at all events we have here the portion of the gland in which active disease is apt to be lighted up when stimulated to do so. This area of activity (or it may be in a quiescent state) possesses certain characteristic appearances under the microscope. Here we find collections of the so-called typical "histological tubercles." Each tubercle is composed of a central giant cell, with its many nuclei, frequently arranged in a horse-shoe shape near portions of the periphery of the cell. Surrounding the giant cell is a group of epithelioid cells, and surrounding these another zone of round cells (leucocytes). Instead of the typical tubercle we may have the condition described by Mr. Watson Cheyne in connection with tuberculous bone disease as "tuberculous infiltration," in which we have collections of epithelioid cells, often arranged in groups or columns, with leucocytes surrounding these. Lastly, bacilli may be demonstrated by appropriate methods. The bacillus of tubercle is often found in the giant cell occupying a position in groups towards the centre of the cell away from the nuclei. The bacilli, however, may be found also in the epithelioid cells, and it is stated that they are more constantly found in the epithelioid cells than in the giant cells. From this circumstance, Mr. Cheyne was led to look upon the epithelioid cell as the characteristic element of the tuberculous process.

It will be observed as the result of our study of the pathological processes in a lymph gland that, as there are three zones demonstrated under the microscope in the so-called "histological tubercle," so there are three zones observable in the gross appearances of an infected gland. The three zones in the histological tubercle were the central giant cell, then the zone of epithelioid cells and the outermost zone of round cells (leucocytes). The three zones in the gross structure of an infected gland in its late manifestations would be a central zone of liquefaction (pus), surrounded by a zone of caseation, and this in turn surrounded by the zone of activity growing tubercles which lie immediately under the thickened capsule.

The tuberculous process may not be confined within the limits of the gland capsule. We find frequently that it breaks beyond this barrier, and invades the surrounding tissues. This is most likely to be the case when liquefaction has occurred, and an infected gland may thus be the starting point of a tuberculous abscess of a large size.

The pathological conditions I have described are those of a purely tuberculous process. We have already stated, however, that these tuberculous tissues are prone to become infected with organisms other than the bacillus of tuberculosis. As a result of such mixed infection, most disastrous results may ensue. The course of an abscess which is purely tuberculous is so characteristic that it cannot readily be confused with any other process. Such an abscess may remain for months without producing any symptom. The only sign of its existence may be a fluctuating tumor. There is frqeuently no pain, no rise of temperature, and in fact such a complete absence of acute symptoms that the old writers spoke of such as "cold abscesses." The contrast which is established if mixed infection occurs is very striking; at once all the symptoms of an acute process manifest themselves and, in direct proportion usually to the size of the tuberculous abscess, destructive acute inflammatory trouble ensues to a greater or lesser extent.

I might illustrate the importance of the observations I have made by citing cases from my note-book, showing the course which these cases run when under observation clinically. Cervical tuberculous adenitis is more common in children than in adults, and a large number of cases are annually admitted in to the Hospital for Sick Children, Toronto. As an example of a patient suffering from tuberculosis glands of purely tuberculosis character I might mention that of a boy, eleven years of age, who came to me with enlarged glands in the neck. He had suffered from swollen glands, so his parents stated, for a "few years" previously, but they had become unusually large and tender eight weeks before he applied to me for treatment. I cut down upon these glands and removed them, some from the submaxillary region, and some from the side of the neck lower down. The wound was sutured without drainage, the stitches were removed on the fifth day, the wound healing by first intention. The reverse picture might be instanced by the case of a boy, ten years of age, who ten weeks before he came to me had developed a painful swelling in the neck with a temperature of 105 F. He had a tuberculous history, and had previously suffered from hip disease. No doubt the explanation of the swelling and temperature was to be found in a tuberculous gland which had become infected with some pyogenic organism. The abscess had ruptured into the pharynx, and this gave him temporary relief, but the drainage being inefficient, the abscess recurred, and was opened externaly on the side of the neck. Sinuses however, persisted, and he was referred to me at this juncture for treatment. It was necessary to make extensive incisions through undermined sodden skin, which was in places on the point of sloughing. The sinuses which had burrowed in various directions in the cervical tissues were opened up freely and extensively. A pocket was found passing down behind the sterno mastoid muscle behind the clavicle, as far as the top of the pleura in the region of the carotid and sub-clavian vessels. A large vein was injured during the operation, and gave rise to alarming hemorrhage, and was with difficulty secured in the depth of the wound. The cavities were thoroughly curretted with the finger nail, and were then packed with iodoform gauze. The wounds healed in about two months with, however necessarily, the development of a large amount of scar tissue and a certain amount of torti collis, which may, to some degree, be permanent. The termination of such a case is, however, not always so happy, occasionally life is sacrificed under such conditions.

The clinical course of tuberculous abscesses is very similar. I could record numerous cases where tubercular abscesses have been opened up and evacuated, and then sutured without drainage, and in which healing has occurred by first intention. The most striking examples of these are found in the extensive abscesses which occur in connection with tuberculous joint disease, *e.g.*, in the hip or spine. One case will suffice to illustrate. A girl, thirteen years of age, came to me with a large abscess of the hip. She had suffered from hip disease, and was at the time wearing a hip splint, which she had worn continuously for two years. I opened the abscess under the most strict antiseptic precautions, curretted it thoroughly with my finger nail, swabbed it out with iodoform emulsion in glycerine, and then stitched it up without drainage. The wound healed by first intention. The operation was performed over three years ago, and the patient has come under my observation from time to time since. She has made a complete recovery, and has now discarded her splint, and, I trust, will suffer no recurrence. I could record numerous instances of a similar character. On the other hand, the reverse picture is all too common where a tuberculous abscess becomes the seat of a mixed infection. It is sometimes impossible to prevent this mixed infection, but occasionally it occurs through neglect of proper precautions. A tuberculous abscess, for example, may be allowed to rupture spontaneously, and then mixed infection is sure to occur. Occasionally, but rarely, the abscess may become the seat of mixed infection before it is opened. If our antiseptic precautions are inefficient, we will surely get sepsis, as there is no condition with which I am familiar which so readily becomes invaded by pyogenic organisms as tuberculous abscesses. The results of mixed infection here are most disastrous. I operated in the case of a boy twelve years of age, last July (nearly seven months ago). Mixed infection had occurred before operation. An abscess of considerable size was opened which had developed in connection with a tuberculous hip of the left side. The abscess was drained, and has remained open ever since, until now it is practically closed after seven months' confinement in bed. In the former case noted above, the abscess healed practically in seven days, whilst in the latter it has taken seven months! It is exceedingly difficult to bring such a case as the last to a successful termination; the amount of nursing and attention required is enormous; the dressing must be done daily, and with great care, and during that time the patient's general health must be carefully looked after. In spite of all our care, however, these patients often go from bad to worse, general septic infection occurs, visceral complications supervene, and the patient may die after a prolonged and painful illness.

My object in writing this paper for the Dental Society is to record my belief that many of the cases of tuberculous adenitis in the neck originate in dental caries. I have cited cases which illustrate the ravages of tuberculous disease in other parts of the body because, as a rule, these more extensive manifestations afford a more graphic picture of the possible course of tuberculous disease than, fortunately, is usually found in the neck. Wherever tuberculous trouble presents itself, however, we must recollect that the occurrence of mixed infection may result in the most disastrous consequences, possibly endangering life or, short of that, leading to a prolonged painful and debilitating illness, resulting often in deformity and chronic ill health. Whilst the existence of caries may be the cause of the original tuberculous infection it may also subsequently be the cause of mixed infection. There are no doubt many other reasons why caries, in the teeth of children more particularly, should have immediate attention, but from the standpoint of the practical surgeon I am convinced that the danger of producing infection of the cervical lymph glands in the manner suggested in this paper should be a powerful incentive in urging the proper care of the teeth in childhood.

100 College Street.

THE JACKET CROWN.

By J. F. Ross D.D.S., Toronto.

Read before the Dental Society

Of the various crowns for the restoration of the anterior teeth, none appeals to me as having more points of intrinsic merit than the one under consideration. In this short treatise, let us, for convenience, consider it under the following headings:

1. Its advantages and indications for use.
2. Its disadvantages and contra-indications for use.
3. Mechanical preparation of tooth.
4. Its construction.

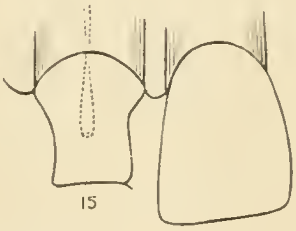
(1) *Advantages.*—(*a*) A considerable portion of the crown of the tooth is preserved. (*b*) The cementing of the jacket to such a good foundation almost invariably assures permanent attachment. (*c*) The crown, properly constructed, under average conditions, is undoubtedly strong and artistic, restoring the function of the tooth, and, if fractured, can easily be removed and repaired without our having to face that nightmare obstacle, "a broken pin firmly cemented into a root." (*d*) In case of subsequent trouble, which is always possible, perfect access to the root canal is always easily obtainable through the lingual part of the crown. (*e*) In a large number of instances, teeth may be crowned without the necessity of pulp devitalization. The jacket is particularly indicated in peg laterals and anterior teeth slightly inside the arch, but it may be used in almost any case where the tooth is not too prominent.

(2) *Disadvantages.*—(*a*) Comparative difficulty in construction. (*b*) Reducing the tooth and fitting the band are rather trying on nervous patients. (*c*) In teeth that are prominent there is generally difficulty in reducing the labial surface sufficiently to make a strong porcelain attachment. These three

disadvantages are of necessity contra-indications for the use of this crown.

(3) *Mechanical Preparation of Tooth.*—If the tooth to be crowned contain a cavity, it must be properly excavated and filled with cement or amalgam. Reduce the length of the crown of the tooth by about one-third, then with thin carborundum discs, trim off about one-quarter of the width on each of the mesial and distal surfaces, thus leaving the tooth about one-half its original width, at the same time removing the enamel at the cervical circumference as perfectly as possible. Then reduce the labial surface sufficiently to accommodate a fair amount of porcelain body, with which to attach a thin porcelain veneer. Remove enough of the lingual portion to allow the thickness of the platinum of which the jacket is made, providing the occlusion demands it (Fig. 15).

(4) *Construction.*—To the prepared tooth fit a straight tube of platinum about 32 B. and S. gauge (Fig. 16). Slightly compress this tube mesio-distally, after which cut out the lingual portion from the cervical margin. Solder to tube as it now appears, a new lingual part of iridio-platinum about 32 gauge (Fig. 17). The next procedure is to grind down, on a lathe corundum wheel, the labial surface of the tube, and by exercising care and little pressure, a thin film of platinum will remain, which will prevent the porcelain subsequently added from entering the interior of the jacket (Fig. 18). The platinum, which now remains projecting beyond the incisal edge of the stub, is then cut into several slits, which are folded over irregularly on the labial surface, and this affords the best possible attachment for the porcelain body. The platinum jacket being now completed, a layer of porcelain is placed on its labial surface, and biscuited in the furnace. After cooling, it is placed back on the tooth to its proper position, more body is added, and the facing or veneer adjusted, noting proper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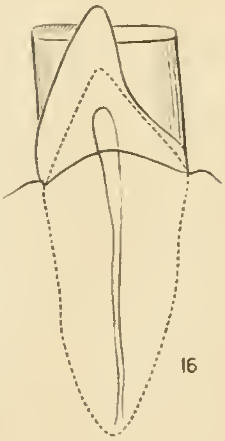
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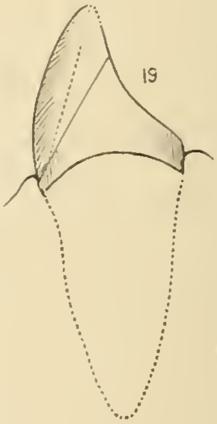
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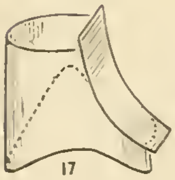
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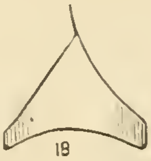
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relation to the other teeth. Surplus moisture is then dried out with blotting paper or cotton napkin, and the whole removed carefully from the tooth. Place more body when required, and fuse again. The metal parts must then be polished, and the crown is complete (Fig. 19).

DISCUSSION BY A, J. HUSBAND, D.D.S., TORONTO.

In opening the discussion of this paper I wish to compliment the essayist on the lucid manner in which he has presented the subject to us.

Under the head of "Disadvantages," is mentioned comparative difficulty of construction. It seems to me that compared with the Richmond. or any other made-to-order porcelain and metal crown, its ease of manufacture should entitle it to a place in the columns of "Advantages."

In constructing the crown a few little points may be of advantage to us, such as in grinding the porcelain facing to have its inner surface as concave as possible, thus affording a larger surface for attachment of the body. Teeth used in vulcanite work, are better for this purpose on account of greater thickness. The grinding is made easy by the use of this little contrivance, and a knife edge wheel, it keeps your fingers in better condition for operating.

Dr. Ross advises the addition and biscuiting of body to the metal jacket before attaching the facing, I think a better method is to place the jacket on the tooth, add a little body to the labial surface, then adjust the facing, withdraw the whole and biscuit. Further addition of body can be made without endangering the position of the facing.

For lower incisors, and all small rooted teeth where enough of the crown remains. the "jacket" appeals to me as the crown above all others.

PORCELAIN BICUSPID AND MOLAR CROWNS.

By Edward C. Abbott, D.D.S , Toronto.

Read before the Toronto Dental Society.

While porcelain crowns are adapted to the ten anterior teeth, their application to the bicuspids is pre-eminently indicated. Here we have perfect esthetic effects, combined with strength, more than in any other crown used in this location.

In considering the subject it may be wise to go into a few details of root preparation. The strength of a porcelain crown is proportionate with the bulk, therefore it is desirable to secure as much space as possible in order to allow for a sufficient bulk of porcelain.

Root Preparation.—The remaining part of the natural crown should be ground or broken down by the usual method, leaving about 1-16 of an inch projecting beyond the gum. Enamel cleavers should now be used to remove the enamel from this projecting end of the root. The periphery of the root should be made smooth and present a perpendicular line. This can be accomplished by the use of root reducer, burs, etc., for the purpose. The measurement may now be taken, and a band constructed of platinum 28 or 29 gauge. In making the joint, the ends should be slightly overlapped before soldering. The surplus end, or part overlapping, should be on the outside, so as not to reduce the size of the band. Use a minimum amount of solder, either pure gold or 25 per cent. platinum solder. The band should now be trimmed to follow the cervical curvature of the gum, and cut down so as to be as narrow as possible. The basal end of the root should now be ground. In bicuspids and molars the pressure is direct, consequently it is desirable to have the basal end of the root almost flat. The buccal edge may be carried a trifle under the gum, making the band or cap invisible. The lingual may be left projecting somewhat, if desirable. The floor of the cap should be of about 32 gauge platinum. Having constructed the cap, a dowel may now be fitted. This should be of a size proportionate with the root, and of a length proportionate with the length of the crown of the tooth, and should be of iridio-platinum. If there are two canals, a dowel may be fitted to each. The cap, having been slightly perforated at the proper point for the reception of the dowel, is now adjusted to the root. The dowel, as it is forced to place, enlarges the perforation in the cap, and thus secures perfect contact between dowel and cap. This relation may be secured by the use of temporary stopping or wax, and then the dowel and cap withdrawn and soldered. The cap is now adjusted to the root, and "a bite in wax" taken, followed by a plaster impression. The inside of the cap and the surface of the dowel should be coated with a thin film of wax. This allows of its removal from the model. It is usually preferable in bicuspid and molar crowns to use a facing rather than to build up the whole crown. This latter method may be used, however. In selecting a facing, it is very important to have one which will stand the heat necessary in fusing the particular porcelain body used. (The high-fusing bodies are, of course, indicated, and there are several different ones to choose from.) It does not do to use an English facing with any of the high-fusing American bodies.

Having selected a facing the proper shade, it is ground to the proper size and to conform with the other teeth. The cervical edge should be ground thin, so as to slightly overlap the buccal surface of the cap. After properly waxing and investing, the pins should be soldered to the dowel at a point as near the cap as possible, the pins having previously been bent down; thus giving more space for the porcelain.

In order to support the porcelain, which forms the entire lingual surface in bicuspids and molars, it is necessary to obtain this in the metal construction. Different means are adopted: A narrow band of platinum may be soldered to the floor of the cap, about 1-16 of an inch inside the edge. Again, this band may be soldered at the extreme edge, making a cup for the reception of the porcelain. Where two dowels are used, the one in the lingual root is sometimes used as a support for the lingual cusp. Where this is done the end should be well rounded, so as to prevent fracture of the porcelain, and this support should come in the centre of the lingual cusp, and should not be higher than 1-16 inch above cap. Having completed the soldering, and if pure gold has been used, it should be thoroughly incorporated, we now thoroughly cleanse the parts, round off any sharp angles in the platinum, and secure the end of the dowel in a pin vise. The body may now be applied. Care should be taken to thoroughly condense the body by gently tapping until all mosture has been brought to the surface and absorbed. Some allowance should be made for shrinkage. Two bakings are usually sufficient. In the final glazing, care must be taken not to overbake. The best way to know when porcelain is properly fused is to educate the eye. The furnace may be opened, and the porcelain watched as it approaches the fusing point. Just as soon as the proper glaze is obtained the heat should be cut off.

TEST CASE IN COLLECTING FEES FROM DENTISTS.

EUDORE DUBEAU, L.D.S., D.D.S., MONTREAL.
Secretary D.A.P.Q.

Looking into the editorial of THE DOMINION DENTAL JOURNAL, January number, I see that while admiring the new Dental Act of the North-West Territories, the editor notices the fact that they have no provision for the collection of fees of those who refuse to pay. In the Province of Quebec we were lacking the same power, but last year the Legislature decided that "a licentiate who has not paid his annual fee after a registered notice of sixty days, is suspended from practice *ipso facto,* and consequently if he practices, does so illegally." According to that we made a *test case,* and the judgment was rendered in favor of the Association by Judge Choquette, last week, in Montreal.

The judgment reads as follows : " As it has been proved that the defendant has received a duly registered account of his dues on May 29th, 1903, and has practiced for remuneration, on November 25th, in the City of Montreal, the said defendant is found guilty of practicing dentistry illegally and is fined $25.00 and costs. In default of payment inside of fifteen days, the defendant will be incarcerated for a period of one month."

I think that this is the first time that a case of this kind is tried in Canada, I mean in dentistry, as I know that lawyers have done the same before. Such a law should exist in all provinces, because it is too much trouble, and not worth it, to sue a man for two or five dollars, and, moreover, in many cases the Boards would have to pay the costs.

To conclude, I must say, that I also admire the new dental law of the North-West Territories, but it seems to me that the Province of Quebec has still the best dental law, having, as aforesaid, the power to suspend a licentiate for non-payment of annual tax, and in addition the right to decide what kind of advertisement it is professional for its members to make. In reference to this last power, I wish to say that a dentist in the Province of Quebec is allowed to advertise only his name, profession and address, and the space granted for such is twenty lines of a single column in newspapers. This is another article of our law that I would like to see in the dental law of each province.

OCCLUSION.

By G. Arthur Roberts, D.D.S., Toronto.

Read before the Odontological Club.

Occlusion should be the one great theme of the teacher of dentistry, and the fundamental principle underlying all operations performed in dentistry. What the mariner's compass is to the captain of an ocean liner, ideal normal occlusion ought to be to the dental operator—always before him, a guide, nature's guide, to success by the shortest possible route. We cannot improve on nature's mechanisms, in the animal, vegetable or mineral world. What more perfect, more ingenious, more complicated, and yet simple than the construction of a living organism, be it worm, insect, bird or animal. Nothing wanting, yet nothing superfluous. True it is, there are certain organs whose function is not understood, but the world is young, and we learn but slowly; the generations to follow will open many of what are now to us closed books in Nature.

What a thing of beauty is a perfect set of teeth! Did you ever think, when looking at one of those rarities, a set of teeth in apparent normal occlusion and undeformed by fillings, what a beautiful thing it is? There is no monotony there, the centrals beautifully rounded, broad and strong, the laterals smaller, and yet not too small, set in a little back, and so graceful and dainty in their lines; that strong, wedge-shaped cuspid, with its massive root, as if intended to be what it is, a pillar of the face. Stop for a moment and think what a smile would be if these teeth were all monotonously alike in width and position.

And now to come directly to our subject. What is occlusion? I would define it as the relation which the teeth of one arch bear to those of the other when closed against them. In normal occlusion there is perfect harmony both from an artistic standpoint and also from the utilitarian. So in all our treatment for the correction of irregularities, perfect occlusion should be the goal ever in our minds; and the nearer we get to that condition the more ideal will be our results in facial line and masticating mechanism. There can be no irregularity where there is normal occlusion, therefore the end in view should not be to make the six anterior teeth straight, but to place the arches in normal occlusion, then we may be certain not only of the regularity of the anterior teeth, but of the restoration of normal function of both jaws, and the assistance of nature in retaining the teeth in the position for which they were intended.

Now, kindly notice what is the intended position. This is a photograph of the most perfect occlusion ever found, and even in this we do not find the ideal.

We will start with the first molars, since they are the largest and strongest teeth in the arch, are the first in the permanent set to erupt, and, in a very great many cases, their malocclusion is the cause of malocclusion of other teeth and general derangement of the entire mandible.

In normal occlusion the mesial incline of the mesio-buccal cusp of the upper first molar occludes with the distal incline of the mesio-buccal cusp of the lower first molar, while the distal incline of the same cusp occludes with the mesial incline of the distal-buccal cusp of the lower molar, the mesial incline of the distal-buccal cusp of the upper first molar occludes with the distal incline of the distal-buccal cusp of the lower first, and its distal incline occludes with the mesial incline of the mesio-buccal cusp of the lower second molar. The inclines of the upper second molar occlude similarly with those of the lower second and third. But notice how Nature does away with anything superfluous, and cuts off the distal incline of the distal-buccal cusp of this upper third molar, so that the distal surfaces of the two third molars when occluding are practically continuous.

Now, let us go back towards the front of the mouth and take the upper second bicuspid. Its distal incline occludes with the mesial incline of the mesio-buccal cusp of the lower first molar, while its mesial incline occludes with the distal incline of the lower second bicuspid. The mesial and distal inclines of the upper first bicuspid occlude with the distal incline of the lower first, and the mesial incline of the lower second. The distal incline of the upper cuspid occludes with the mesial incline of the lower first bicuspid, and its mesial incline with the distal incline of the lower cuspid. The upper lateral occludes with the mesial incline of the lower cuspid and the distal half of the lower lateral, while the upper central occludes with the lower central and mesial half of the lower lateral.

So you see that all the teeth of one arch occlude with two of those of the other, with the exception of the lower central and upper third molar. To some people a knowledge of these details seems unnecessary; but, gentlemen, unless we have this normal relationship well established in our minds, we need not expect to obtain ideal results in orthodontia.

I have said that the first molars are the cause of many forms of malocclusion, and I think it will only require a few words to make that clear. Supposing one or both of the upper temporary molars have been extracted before the eruption of the upper first molar, as we all know, that upper first molar will erupt more or less forward of where it should be; then when the bicuspids come in, they will be outside or inside of the line of occlusion, or will force the temporary cuspid forward and cause a protrusion or bunching of the incisors. This might happen in either jaw, of course, and if it happened in both, the molars might remain in normal mesio-distal relation.

An incline plane is an incline plane whether it be a toboggan slide or the bannister of a staircase, put anything on it, and the tendency is to slide in the direction of the incline. To imagine, as we might, from the cuts shown in even some modern textbooks on orthodontia, that the teeth will remain in their so-called "corrected" positions, with the points of the cusps in occlusion, is manifestly absurd, no matter how long the retaining appliance is kept on. The incline plane, then, is one of the most important factors governing normal or malocclusion. When a tooth first erupts it often appears considerably displaced, but if its incline plane bears a normal relation to that of its opponent, no alarm need be felt as to its eventual position. But if that relationship is abnormal, not only will that tooth be out of the normal line of occlusion, but it will be the cause of more or less serious displacement of some or all of the teeth in the arch. In other words, every tooth was made for a certain position, and it cannot occupy any other without injury to normal occlusion and deformity of facial lines.

The lower arch has a very strong influence over the upper, because the teeth of the lower jaw generally erupt first, and over them, to a certain extent, is moulded the upper. If the lower incisors are bunched, almost invariably we find the upper incisors overlapping one another more or less in trying to assume a normal contact with the lowers. Of course, the upper acts upon the lower, too, but the lower is *naturally* the more important factor of the two.

The arch form is another factor in occlusion, for one tooth acts against its neighbor something like the stones in an archway—remove or displace one, and the others show a tendency to close up tight. Another important force is that exercised by the lips and cheeks in preventing expansion. An enlarged tongue may overcome this force, and produce expansion of the arches and spacing of the teeth.

Habits such as tongue or finger sucking, allowing the tongue to lie over the cutting edges of the incisors, are certainly the origin of many forms of malocclusion.

Bad dentistry is another—fillings with no form or contour, unnecessary extractions, and extractions without replacement by substitutes.

Nasal growths, pyorrhea alveolaris, premature or delayed extraction of the temporary teeth—all these and many more, as you know, are to blame for most forms of malocclusion.

It is most important that we should have some ideal lines to work on. I have mentioned the first molars as being a sort of starting-point in considering the mesio-distal relation in occlusion. To have a labio-lingual or bucco-lingual ideal line, Dr. Angle has suggested the term " line of occlusion."

This imaginary line is the line of greatest normal occlusal contact. It passes over the buccal cusps of the molars and bicuspids, and the cutting edges of the cuspids and incisors of the lower arch, and along the sulcus between the buccal and lingual cusps of the molars and bicuspids, over the lingual ridge of the cuspids, and the lingual surfaces of the incisors on a line about 1-3 of the length of their crowns from their cutting edges. All teeth on the outside of this line are said to be in buccal or labial occlusion, and those inside of this line are said to be in lingual occlusion. The teeth that do not come down or up to it are in infra occlusion, and those that extend beyond it are in supra occlusion.

Such teeth as are normally placed mesio-distally or labio-lingually, but are twisted and do not come in normal contact with this line, are in torso occlusion.

Thus we have only seven terms which cover all forms of malocclusion of a tooth, viz., mesial, distal, infra, supra, buccal or labial, lingual, and torsal. The knowledge of these simple terms will help us wonderfully in the study of cases of malocclusion, and our remarks on the subject will be better understood.

It is really very difficult to know where to stop, there are so many subjects intimately connected with occlusion. It would be interesting and profitable to go into the histology of the maxillary process and the peridental membrane, and the part they play in occlusion and malocclusion. The influence of occlusion or malocclusion on the facial lines is another. Some of us listened to a most interesting paper read by Dr. Park Lewis, before the American Society of Orthodontists recently. His subject was deformities of the face in relation to defects in the eye and brain, and opened up an entirely new line of thought, on general principles, which may lead to some startling revelations in the future.

Before I close, however, I would like to briefly give Dr. Angle's wonderful and apparently perfect method of classification of all cases of malocclusion. Perhaps it will give you a little more material on which to differ with me, and so supply food for discussion.

When a surgeon is called to attend a man who is injured, when a physician is called to the bedside of a sick patient, when an engineer is sent for to repair a broken bridge, he first examines the general extent of the trouble, the symptoms, then he looks for the cause, and ascertains exactly how that cause acted, generally speaking, and in minutest detail. After due consideration, he directs his attention to the treatment of the case. Now, in considering symptom, cause, and treatment, he has always in his mind the normal condition of the entire structure. So I repeat that we shoul have well-grounded in our minds, in dealing with any form of malocclusion, the details of normal occlusion of each surface of every tooth.

Diagnosis *must* come before treatment, and a correct diagnosis includes etiology.

Another most important point in correct diagnosis is studying of the facial lines, and for this suitable photographs, profile and full front, should be secured. How often faces are ruined by failure in proper diagnosis. For instance, the retraction of the upper anterior teeth, when the real trouble is a retrusion of the lower jaw.

Sometimes the upper arch is the cause of the deformity, and sometimes it is the lower, but the question can only be decided by a knowledge of facial art, and the study of the facial lines of the patient.

Dr. Angle divides all forms of malocclusion into three great classes. The first is characterized by correct mesio-distal relation of the jaws and arches, with the first molars in normal mesio-distal relation, though one or the other may be in lingual or buccal occlusion. Most of the cases in this class are associated with a reduction of the sizes of the arches, and they form about 70 per cent. of all cases of malocclusion.

The second class comprises those cases where we find the lower teeth occluding distal to normal the width of a bicuspid tooth. This class has two divisions, with a subdivision in each. The first division is that in which both sides occlude distal to normal, with a more or less narrowed upper arch, and protruding incisors. This class is usually associated with mouth breathing. In the subdivision only one side occludes distal to normal, the other being normal.

In the second division of this class, there is less narrowing of the upper arch, and a lingual inclination of the upper incisors, which are more or less bunched. In this division, however, there is normal breathing and nasal function. The subdivision limits the distal relation to one side.

In the third class the lower arch is mesial to normal in relation to the upper, and is characterized by an apparently overdeveloped and protruding chin. This class has a division and a subdivision. In the division, both lateral halves are in mesial occlusion, while in the subdivision one side is abnormal.

In this class there is great variety in the alignment of the teeth, from a quite regular alignment to the most marked bunching and overlapping. The lower incisors show a lingual inclination, which increases with the age of the patient, due to the constant pressure of the lower lip in an effort to close the mouth.

The loss of a tooth by extraction or otherwise complicates diagnosis, but in the opinion of men of long experience this classification covers all forms of malocclusion.

Gentlemen, in closing I cannot but feel that these have been wandering remarks, but if I have refreshed your minds on an old subject, or mentioned something which is new to you and will make you think, I shall feel repaid for the little time I have had to spend on the preparation of this paper.

Selections

SUSCEPTIBILITY AND IMMUNITY TO DENTAL CARIES.

By J. Sim Wallace, D.Sc., M.D., L.D.S.,
Assistant Surgeon National Dental Hospital.

A subject of great importance in the investigation of this problem is the physiology of mastication. Here again I must insist on an abandonment of hitherto current beliefs. The process of mastication is not as described in books of physiology. Take, for example, the description given in the text-book usually read by dental students. It runs: "When solid food is taken into the mouth, it is cut and ground by the teeth, the fragments which ooze out upon the outer side of their crowns being pushed beneath them again by the muscular contractions of the cheeks and lips; while those that escape on the inner side are thrust back by the tongue, until the whole is thoroughly rubbed down. . . . . When the food is sufficiently ground, it is collected, enveloped in saliva, into a mass or bolus which rests upon the back of the tongue, and is carried backwards to the aperture which leads into the pharynx."

It will be observed that this description would lead one to think that the food is comminuted, mixed with saliva, and made into bolus form and then swallowed.

It seems difficult to believe that such an erroneous description should have been written by Huxley, and equally difficult to conceive that no one has had the courage to call its accuracy in question. For anyone can observe for himself at each and every meal that the description of the process is quite inaccurate. Before describing the process, however, when it is thoroughly performed, it should be noted that certain foodstuffs which are consumed at the present day are hardly subjected to the process of mastication at all. The food is simply taken into the mouth, receives a general squash between the teeth or between the dorsum of the tongue and the hard palate, and is then swallowed. This method of mastication, if mastication it can be called, is as a rule adopted for custards, fine meal porridge, soft puddings and soft non-fibrous foods generally.

When there is a certain amount of coarse or fibrous matter in the foodstuff, then the process is essentially different, and mastication is performed in a more thorough manner. In this case, the food is crushed and torn between and heaped on to the masticating surfaces of the teeth by the muscular contractions of the tongue, cheeks, lips and motions of the lower jaw. During comminution between the teeth, the juices of the foodstuffs, the saliva which becomes incorporated, and the suspended non-fibrous part, are pressed out from the fibres and gradually collect during the process on the middle of the dorsum of the tongue, which is gradually hollowed out for the reception of such food, and this part is then swallowed. The fibrous part of the food, however, is subjected again and again to the crushing and disintegration between the teeth. If any of the fibrous part passes towards the back of the dorsum of the tongue, it is arrested by the pressure of the anterior part of the tongue against the rugæ of the palate, and, while the fluid and finely comminuted part gets sucked or pressed back of the dorsum of the tongue, the coarse and fibrous parts are thrown between the teeth and subjected again to the crushing, squeezing, and comminution. The rough surface of the tip and dorsum of the tongue and the smooth-ridged palate are especially well adapted for this separation of the food prepared for swallowing, and that which requires further mastication.

When a child is brought up on foods of a consistency demanding real *mastication*, it acquires the habit of masticating, whereas pap-fed children do not acquire the habit so thoroughly. Leaving aside other considerations which tend to make certain people masticate efficiently, it should be observed that the act of mastication is most important in the natural self-cleansing of the mouth. For when it is efficiently performed, the ptyalin gets thoroughly incorporated with the food, and converts the starch into a soluble form, which becomes expressed from the bolus and swallowed; or if a little lodges about the teeth, the constant rushing of the saliva between and about the teeth tends to dislodge or dissolve any starchy matter that might otherwise lodge and undergo acid fermentation. Thus with efficient mastication it is not only the exposed surfaces of the teeth which the saliva helps to clean, but even the most inaccessible crevices. It should be remembered, too, that the mastication of food which demands considerable muscular activity, calls forth a corresponding flow of saliva, and no doubt the continued use of food causing a healthy flow of saliva, tends to develop the salivary glands. Thus again those who habitually consume food stimulating the flow of saliva, are both directly and indirectly less susceptible to dental caries.

Another general effect of coarse food and efficient mastication, is to wear the cusps of the teeth so that the crevices become small or obliterated, and consequently the susceptibility for food to lodge is lessened.

The modern refinement and preparation of food makes particles which lodge about the teeth peculiarly unirritating. If the food is highly refined "short" and soft, it may be plastered into the crevices of and between the teeth after meals, without stimulating saliva, or exciting the tongue to dislodge it; but if, for example, nuts are consumed, there is something in their physical nature which makes one very conscious of their presence and stimulates not only the flow of saliva, but also the motions of the tongue and cheeks until they ultimately are dislodged.

So also the modern preparation of food tends to deprive it of the natural fresh vegetable acids which would otherwise almost invariably accompany vegetable foods. Thus it correspondingly happens that the saliva is not so fully stimulated as it should be. Now, when acid is taken into the mouth, not only is the saliva stimulated directly, but the acid which reaches the stomach stimulates the flow of saliva also. At least I appear to notice a much more copious flow of saliva after having eaten, for example, stewed apples, than after eating some bland neutral, or alkaline, pudding. The importance of what we may call the after-flow of saliva can hardly be doubted; for the frequent swallowing which it causes after meals is a most potent factor in the self-cleansing of the mouth.

Before proceeding further it may be advisable to draw attention to some facts with regard to the secretion of saliva. In general it should be remembered that the work of the salivary glands is capable of adapting itself to given conditions, that is to say, bears a definite relationship to the requirements, which must be fulfilled by the saliva produced.* "It is of importance to bear this in mind, for as things are usually taught at present one is led to suppose that the work of the salivary glands is of no import, and that they respond in haphazard fashion to every form of stimulus."†

The general relation of the saliva to the nature of the fooa and to the self-cleansing of the mouth may firstly be indicated by the following observations. If some sand is thrown into a dog's mouth "the saliva flows in quantities, because sand cannot otherwise be got rid of than by a free stream of fluid. Upon all substances which the dog rejects, for example, acids, salts, bitter and caustic substances, saliva will likewise be found, because these required to be neutralized, diluted, or washed out of the buccal cavity. This explanation is fully confirmed by the absolutely constant and striking fact that a thin watery saliva, containing mere traces of mucin is poured out by the mucous salivary glands upon every substance without exception which requires to be removed, while upon eatable substances a slimy mucin-holding fluid is secreted which lubricates the food bolus and facilitates its descent through the esophagus. Further, the quantity of saliva secreted is closely related to the dryness of the food. The drier this is the more saliva flows—a striking proof that the first of the digestive glands adapts itself to the physical conditions of the food."‡

I shall now refer to an observation which can scarcely be doubted, namely, that, on the whole, people who eat but three meals daily, are less susceptible to caries than those who eat a greater number daily. The explanation of this is, I believe, as follows: When only three meals are consumed the stomach generally is allowed to empty itself before another meal is taken, so that the process of digestion goes on normally. During the consumption of one of these meals there is a considerable flow of saliva, for the appetite tends to be keen and the secretion fairly abundant. After the meal is finished the after-flow of saliva continues for a time, but gradually decreases as the acid secreted by the stomach gradually increases. Suppose, on the other hand, that four or five meals are taken daily, then the stimulation of the flow of saliva is unduly divided, and the amount secreted during and immediately after a meal is less than when only three meals are consumed. But if the amount of saliva is less, both during and after the meal, then the self-cleansing of the mouth by this means is correspondingly less. If, as is the case with cooks and confectioners, the place of vigorous stimulation of the salivary glands is taken by repeated little stimuli, then the results are even worse. Moreover, of course, if a little food tends to lodge after each meal, should six meals be taken instead of three, then there will, other things being equal, be twice the susceptibility to the results which follow the lodging of food.

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*Paulo and Thompson, "The Work of the Digestive Glands," p. 150.

†Ibid.151.

‡Paulow and Thompson, pp. 151, 152.

Another habit which influences the susceptibility to dental caries is the time taken over a meal. Thus if a meal is begun, continued, and ended without intervals or without unnecessary waste of time, the likelihood of harm resulting to the teeth is not so great as is usually the case. When we consider, too, the general question of the physiology of digestion it is evident that spending a long time, say more than half an hour, over a meal, is in no way conducive to the digestion of the latter portions of the meal. Nor can we expect that the after-flow of saliva will be considerable after a long-drawn-out meal.

Let us now direct attention to the method of the self-cleansing process. If the food has been of such a nature that real or thorough mastication has been called forth, then, of necessity, any particles of food that do lodge will be well incorporated with saliva, and as the ptyalin does not exhaust itself appreciably the process of the conversion of starch into a soluble form will continue so long as the starch remains. The after-flow of saliva from the parotid passes round the buccal sides of the teeth, and is sucked in between the teeth each time the act of deglutition occurs. Thus any food particles tend to be dislodged and swallowed. With some people the mouth seems to become callous, and the particles of highly-refined food do not materially stimulate the self-cleansing process, but with others the case is quite different, and after meals they may be observed swallowing frequently, and may, unfortunately, sometimes be heard sucking the saliva between their teeth, evidently semi-consciously dislodging food particles. With each act of deglutition, too, the floor of the mouth is brought upwards and the tongue pressed forcibly on the teeth and palate, while part of the saliva from the sub-lingual and submaxillary glands is forced out between the teeth. Then, again, the tongue performs certain movements which tend to dislodge food particles. It may be pushed out over the molar teeth, and the point bent upwards or downwards between the cheek and the gum and then carried forward, or it may otherwise be thrust between the teeth and the cheek or lips and made to dislodge particles of food.

There are certain conditions which influence this self-cleansing process, for example, the arrangement of the teeth. I have shown elsewhere* that the arrangement of the teeth is chiefly influenced by dietetic considerations, but what I would here refer to is that the natural movements of the jaws during mastication are frequently prevented by the mal-occlusion of the teeth. It often happens that the occlusion is of such a nature that the lateral or grinding movements are prevented. Now this grinding movement is of importance, especially for the self-cleansing of the molar teeth, for the more the lateral movement the more is the saliva pressed and sucked to and fro between the approximal surfaces of the molar teeth. We shall have occasion to refer again to the arrangement of the teeth in elucidating susceptibility and immunity of the different teeth.

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*Essay on the Irregularities of the Teeth.

Another condition of some little importance in the self-cleansing process is the mucous coating over the teeth. In every mouth there are parts of the teeth which are not naturally subjected to much mechanical cleansing, and these parts are consequently liable to lodge food particles. They are more or less protected by a thin slippery film, which adheres to the teeth so firmly that if the tongue is swept over it it is not removed. Now if the particles of food lodge on the surface of this film the self-cleansing motions of the lips, cheeks, and tongue tend to dislodge them. Similarly the removal of particles of food by the tongue from the mucous membrane of other parts of the buccal cavity is no doubt facilitated by the slippery nature of the mucous membrane.

It is thus somewhat important to stimulate the mucous secretions of the mouth by the consumption of a fairly coarse and fibrous diet, and as we shall see presently the stimulation of the mucous membrane to epithelial proliferation helps to prevent acid formation.

Then, again, the relative amount of carbohydrate in the food is of importance. If it is concentrated and soft it is much more liable to cause caries than when it is small in amount compared with the amount of fibrous matter which demands considerable mastication and insalivation. The presence of much sugar in the food is of special importance, because the action of the saliva is hampered by the presence of sugar. It may perhaps be imagined that children always consumed nearly as much sugar as they do now; but note this fact, "In 1883 the import of sugar for home consumption per head of the population was 9.91 lbs. of refined sugar; in 1900 it was 52.23 lbs." But this does not represent the total increased consumption of sugar, for there has been an astonishing increase also of tinned fruits, which are generally preserved in syrup. I need hardly mention that some people consume more sugar than others, and here again we have a potent cause of variation in susceptibility and immunity.

The nature of the saliva differs under different circumstances. In a state of health it is alkaline, abundant and active. When the subject suffers from dyspepsia it may be acid and more or less inactive. In cases of hyperchlorhydria, however, it is said that the saliva is markedly alkaline, a condition which shows certain important relations of the gastric and buccal secretions. In fact, I believe that the secretions of the mouth are almost as frequently vitiated by the consumption of unsuitable food as are the secretions of the stomach and intestines, and one of the commonest forms of indigestion is what we may call oral indigestion. This oral indigestion closely resembles indigestion in the stomach, and is associated with insufficient movement, vitiation of the secretions, tardy chemical digestions, prolonged lodgment of food, fermentation, and frequently acute pain. The conditions above referred to are directly and indirectly almost solely the result of improper food, and consequently the susceptibility and immunity brought about by oral indigestion are almost solely of dietetic origin.

In conjunction with the variable nature of the salivary secretion, due to the difference in chemical and physicial properties of the food, we should note the difference in quantity of the mucous secretion. If the food is of a bland, soft nature, the mucous secretion is not stimulated much, but if it is coarse and fibrous the mucous secretion is considerably stimulated. The nature of the mucus should be considered. It clings tenaciously to the surfaces with which it comes in contact, and thus, besides facilitating deglutition, it coats the teeth where they are not subjected to friction, and being of an albuminous nature it does not induce the acid-forming bacteria to proliferate, while if the food is acid it becomes insoluble and forms a more or less impassable barrier for the acid. After the meal, however, the alkaline saliva—in which it is soluble—tends to clear it away, together with adherent food particles. Akin, no doubt, to this mucous coating are the gelatinous plaques under which caries starts. I am inclined to believe that caries occurs not on account of the plaques, but in spite of them.

We may now consider the nature of the micro-organisms of the mouth. Some are acid producers, some are liquefiers, and some produce acid or liquefy according to the medium in which they exist. It is obvious that those bacteria which liquefy gelatine and other albuminoid substances must be of great importance in rendering shreds of foodstuffs soluble and so helping to clean the buccal cavity, and within limits the acid producers may have a similar function. In fact, it would seem impossible to do without the mouth bacteria; as there is no ferment in the mouth capable of digesting the albuminous shreds and particles which otherwise would be bound to accumulate between and about the teeth.* It may be said that at least it would be well to do without a considerable proportion of the acid-producing bacteria, for without acid it is impossible to have dental caries. No doubt this is so. But this result is best obtained by efficient mastication, for food which requires considerable mastication calls forth a corresponding flow of saliva which gets thoroughly incorporated with the food. The ptyaline converts the starch into a soluble form, while the mastication expresses it from the rest of the bolus. Thus, therefore, the starchy matter is more or less thoroughly swallowed, while the remaining part is being more completely masticated. By this means the smallest possible residue tends to lodge about the teeth and what little does remain, being almost devoid of starch, allows the bacteria which liquefy to predominate while preventing the multiplication of the acid-producing bacteria. If, however, food—especially starchy food—is taken in a soft form the flow of saliva is, relatively to the amount of starch, but inefficiently stimulated. The starch is not fully converted and swallowed, but remains plastered, as it were, into all the crevices in and about the teeth. Furthermore the chronic lack of efficient stimulation of the salivary glands engendered by relatively soft foods leads, no doubt, to a corresponding lack of development and output of ptyaline. Now, if there is a relatively great amount of starch left about the teeth can we wonder that the acid-producing bacteria largely preponderate and play havoc with the teeth?

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*Compare the septic tank system for the purification of sewage.

There are some clinical observations which tend further to corroborate these observations, for example, the fact that millers who are constantly breathing flour dust are particularly susceptible to caries, while on the other hand those who suffer from chronic gingivitis due to tartar, tend to show signs of immunity to the disease. In the first case, we have a constant supply of carbohydrates without the physiological processes which clear them from the mouth, and a consequent increase in the number and intensity of the acid-producing bacteria, while on the other hand the chronic inflammation of the gums at the necks of the teeth gives rise to an undue proliferation of the albuminous epithelial and other cells, and a consequent increase in number of the liquefying bacteria. Presumably also the inflammation produces an increased flow of the *alkaline* secretion which is normally produced at the necks of the teeth.* This at least may be assumed to take place in the early stages of the disease before there has been much destruction of the structures round the necks of the teeth.

Another observation which tends to lead me to similar conclusions is the fact that the excavation of carious cavities is more or less painless when the decay is slow, while it is as a rule rather painful when the decay is rapid. When the decay is slow, carbohydrates being limited in amount, the proliferation of the liquefying bacteria is as a rule predominant, and consequently the dentinal fibrils are disintegrated in advance of the decalcification, while when the decay is rapid the acid-producing bacteria are particularly predominant, and therefore the dentine is decalcified in advance of the living and sensitive dental fibrils. So, too, if a very sensitive cavity is but partly cleaned and covered over with cement so as to exclude carbohydrates more or less completely, it will gradually become less sensitive, as presumably the liquefying bacteria destroy the albuminous fibre.—*Dental Record.*

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* "The Causes and Prevention of Decay in Teeth," pp. 65 and 67.

TEETH AS A HISTORY OF THE PAST.

By Arthur S. Underwood, M.R.C.S., L.D.S. (Eng.)

Extract from Inaugural Address before Odontological Society of England.

The teeth, which we study and discuss, if we will only regard them with liberality and reverence, and not simply as convenient receptacles for gold fillings, are the great imperishable archives of the history of the animal world. They tell anatomists how some of the great long mystery of creation (whether and when, if ever, we shall know it all is another matter) has been advanced; they betray the forms and record the habits of extinct monsters; moreover, they enable us to form a shrewd forecast of the possible changes that may be in store for our remote descendants. Not only this, but since the teeth suggest the form and habits of the various generations of fauna, and as these forms and habits were the direct result of environment, so indirectly odontology suggests the history of that environment, the history, in fact, of Nature itself.

Into this delightful fairyland, which, like all fairylands, is at once truer, more beautiful and more substantial than the nightmare existence presided over by the halfpenny press, Dr. Andrews, of the British Museum, has made of late some very interesting excursions. I sincerely trust that this society will hear more of his discoveries from a more authentic source and nearer first hand during this session, but I am tempted so far to anticipate as to suggest the direction of his discoveries and hint at their scope and importance. In a paper published in August of the current year, in the *Philosophical Transactions*, Dr. Andrews describes and figures two ancestral proboscidians collected in Egypt that carry back the history of that remarkable group of mammals to the Middle Eocene period. Until recently Dinotherium Cuvieri and Tetrabelodon (commonly known as Mastodon) Augustidens from the lowest Miocene beds were the oldest known representatives of the group. Dr. Andrews has recently unearthed Mœritherium lyonsi from the Middle Eocene, a comparatively small animal with a nearly full mammalian dentition, but with a marked specialization of the second incisors above and below. A later form, Palæomastodon Beadnelli (also from the Eocene), shows the disappearance of all but the specialized incisors above and below, and a very singular change in the jaws themselves, a change that throws a sidelight upon a subject which Mr. Rudyard Kipling has in a sense made his own, namely, how the elephant got his trunk. Apparently the increasing stature of the animal led at first to a downward extension of the front portion of both jaws, the nose keeping pace with this elongation as a soft mass resting on a sort of bony beak which carried excessively developed second incisors. The last change lay in the direction of a shortening of the mandible and anterior bony parts of the maxillaries, leaving the flexible nose or trunk free and unsupported.

So within the last few months odontology has yielded up some lost history to the patient inquirer, and another reflection, also odontological, is at once suggested to the mind. What we have discovered, vast as the amount of it when put together, is but the result of some scrapings and scratchings on the very outer surface of the odontological worlds waiting to be explored. What shall we, or those who follow us, find when we really begin to dig? The ocean beds, the untouched deserts, when we have exhausted our own back gardens (which, by the way, will take us some time)—every cubic yard of deposit may teem with epoch-making discoveries. History lies literally in square miles on every hand; we only have yet recorded the sense that something is there, the curtain is scarcely rung up. There is a future before odontology so vast and so splendid that it makes one proud to belong to a society whose lofty boast it must be to stand always in the forefront of discovery in its own particular line. Let us not forget that to be truly practical one must be ready to give everything, all our life's energy, to find out some little true thing that will add to the world's knowledge and help the world along, if it be only a millimetre on its great road, still, something in the way of progress.—*Transactions of the Odontological Society of Great Britain.*

BUCCAL EXPRESSIONS OF CONSTITUTIONAL STATES.

By Eugene S. Talbot, M.S., D.D.S., M.D., LL D.

There was a tempest in diagnosis over the deathbeds of Mary II. of England and Louis XV., who both died of smallpox. The tempest in the case of Mary was due to a fight between society physicians and medical politicians, and was settled by the dictum of Radcliff, who had rare skill in diagnosis. The medical contest over Louis XV. (1774) was essentially one between the partisans of the courtesan Dubarry, and those of the Dauphin, afterward Louis XVI. The hesitation was pardonable, since forty-six years previously (1728) Louis XV. had an attack of smallpox. The contest was more over the gravity of the disease than its type. It is a singular illustration of the value of local conditions in diagnosis that Voltaire says that just ere the more serious symptoms of variola made their onset in 1774. "Bourdet, the King's dentist, visiting the royal mouth, had recognized by the appearance of the gums the premonitory symptoms of a serious malady, and communicated his apprehensions to one of the ministers of state."

Bourdet, like reputable dentists of that time, was medically educated, and, so far as diagnosis then went, was trained in local aspects of constitutional disease. Before the days of the thermometer, stethoscope, and what are called instruments of precision, training in local expression of constitutional states was of necessity more exact and minute than when these instruments were at the service of the physician.

Clinicians, however, continued to value local manifestations. Obstetricians studied the mouth of pregnancy, alienists studied the mouth under scorbutic and cachetic aspects, and under those presented by paretic, paralytic, senile and terminal dementia.

As late as 1881 James Tyson cited as local manifestations of diabetes "a spongy state of the gums with recession and excavation, resulting in extreme cases in absorption of the alveolar process and falling of the teeth." Magitot and other French clinicians had pointed out previously similar buccal manifestation in other constitutional states.

The disease called "pyorrhea alveolaris," under the more exact views of its pathology forced by bacteriology, especially the phases related to culture mediums, stimulated a more exact study of the constitutional states underlying buccal changes. These, in a discussion of the subject some years ago, I pointed out, might, like all local manifestations, have several relationships to the coincident constitutional state; they might be an expression of that state; they might be a complication; they might be an etiologic factor, or they might be a mere coincidence. This is true of all local manifestations, the medically vicious reflex hypothesis to the contrary notwithstanding. In a recent article influenced by the now general trend of specialties of medicine to consider constitutional relations of the local states, Campbell, ignoring most previous dental and medical literature, points out that the state of the mouth is to a considerable extent an index to the conditions of a person's health. If an individual be free from bodily ailments, then, as a rule, the teeth and gums are sound and healthy. The state of the teeth must exert a constant influence upon the condition of the body; and as truly the general condition of the body exerts an important influence upon the state of the teeth, and it is this close relationship of the state of the mouth to the state of the general health that makes the work of the dental surgeon of such paramount importance to the physician. By some it is asserted that morbid states of teeth, gums, alveoli, etc., are the cause of certain diseases. Hunter has endeavored to show that buccal sepsis, having its origin in long-continued and neglected cario-necrotic condition of the teeth, is the cause of the pernicious enemia. This is due to special infection of the digestive tract, caused by buccal sepsis. Campbell, while not denying to buccal sepsis a contributory etiologic nature (which in some cases may be considerable), is nevertheless convinced that it is not only not entirely responsible for the etiology of the disease, but generally plays a minor part. Campbell carefully investigated the condition of the mouth in every case of pernicious anemia that has come under his notice, and has found that while in the majority the gums were spongy, the teeth loose, with pus welling up by their sides, and the gums receding, in others the teeth and gums have shown no sign of the disease.

According to his observations, such buccal conditions are an outcome rather than a cause. The dental condition most frequently met with in diabetes is a loosening and painless shedding of sound teeth. Dental caries, gingivitis and spongy or bleeding gums occur at times. Changes in the teeth due to the imperfect calcification of enamel and dentine often supply a valuable record of the patient's biology. Other conditions of the mouth which will serve as a useful guide to the physician in making a diagnosis are the ground-down teeth of the gouty occasionally met, dental periostitis of the rheumatic, and caries or impaction as a cause of various ailments of children. Suspicion as to the presence of tuberculosis disease may be aroused from the pallor of the mucous membrane, or of Addison's disease from the presence of pigmentation. Certain poisons produce marked changes in the jaws and gums. The condition of the teeth and gums affords satisfactory testimony as to the general state of the health of an individual, and is an invaluable aid to the physician in making a diagnosis.

The condition of the mouth, as I have elsewhere shown, is to a large extent an index of the general health. Owing to the transitory nature of the gums and alveolar process, and the fact that arteries and nerves therein contained are end organs, autotoxic and toxic states are often there indicated long before disease presents itself. Rapid decay of the teeth indicates neurasthenic, degenerate, autotoxic and toxic conditions. Disorders of the teeth and gums cause accumulation of pathogenic bacteria, which produce diphtherial, pneumonic, tuberculous and other mouth and throat lesions. Pus germs taken into the stomach and intestines cause indigestion in both. If inflammation of the intestinal tract be present, pus germs will infect the part.

Matter circulating in the blood causes irritation in the capillaries in the alveolar process. Odor is an expression of this poison eliminated through the throat and lungs. In gout, rheumatism, Addison's disease and most allied diseases peripheral nerves are irritated and degenerate. This is likewise true of the dental pulp, which, as I have elsewhere shown, has a vasomotor system. When disease occurs the pulp nerves are irritated, the arteries dilate and contract, modifying tooth resistance. Tooth decay, so common in all constitutional disease, is due to a want of tooth resistance. Pits and furrows upon the teeth indicate arrest of development due to malnutrition *in utero* or after birth while the teeth are forming. They may be due to syphilis or many other causes.

In dealing with the influence of buccal states on the constitution, it must be remembered that when the alimentary system is overstrained, especially when the poison-destroying function of the liver is deficient or impotent, the throat and gums play a great part in elimination; whence, for example, the "blue" gum of lead poisoning and the "green" gum of brass, as well as the mercurial, arsenical, potassium iodid, bromid and other allied conditions. Matter thus eliminated is reabsorbed, enters into the chyle with digested products, and readily becomes toxic to the blood cells. That cachetic states approximating to pernicious anemia can thus be produced is clearly evident. Were fecal anemia existent ere the gum and throat changes were set up, it would thus be greatly intensified. The toxemia producing this gum and throat state would be greatly increased through the overstrain of oxidizing processes produced by reabsorption of eliminated products. Interstitial gingivitis or "pyorrhea alveolaris" can, as Fitzgerald and myself have shown, be predisposed to by neurasthenia and aggravate this.

The toxins generated in the mouth readily pass into the general system. As a result, chronic indigestion, with co-existent pigment spots, urticaria, etc., may occur, as Herschell has shown. Pus toxins, as in a case reported by Carr and Boughton, may thus produce a sapremia mimicking typhoid, as pigment spots readily simulate the typhoid eruption.—*Dental Era.*

THE HIGH-ARCHED PALATE.

The review of the subject of "High-Arched Palate," by Dr. Swain, suggests some practical points:

1. The deformity may be avoided by removing the anterior nasal and posterior nasal obstruction at an early age, before the process of ossification is complete, which is somewhat near the eighth year.

2. That inheritance, traumatism and malnutrition are not the only causative factors; that nasal stenosis is the most prominent factor; and that an inherited adenoid habit may be practically corrected by operative procedure at a time when the bones and cartilage are still plastic, which is from birth to the eighth year. Operations performed at an early period are followed by

good cosmetic effect, and effectually prevent deformed palate and irregular eruption of the teeth.

3. Failure to operate early results in maldevelopment of the facial bone and nasal cavity, substitution of mouth-breathing and catarrhal states of the mouth, the throat and the gastro-intestinal tract. Through disuse of the nose the adenoid expression is established, which consists of vacant face, open mouth, hanging jaw, nasal discharge, disturbed sleep and snoring, diminished hearing, recurring headaches (in older children), high-arched palate, irregular eruption of the permanent teeth and deformity and lack of development of the chest.

4. The symptoms of chronic nasal, or post-nasal obstruction occur when by day or by night the nasal respiration is supplemented by mouth-breathing.—Editorial in *Detroit Medical Journal.*

"CRUDITIES ABOUT AMALGAM."

In the *International* for January is a paper upon "The Great Amalgam Fallacy," by Dr. Ottolengui, which was read before the Academy of Stomatology of Philadelphia. In the discussion which followed, we find not only fallacies, but astonishing crudities: *e.g.,* Dr. Joseph Head advocated "*packing the amalgam down into both cavities as though one filling,*" and then dividing the two while they are still somewhat plastic; the final polishing is done at a subsequent sitting. If anything more crude could be described, we can hardly conceive it. How amalgam can be so treated and good margins and solid fillings made is beyond our comprehension, and in the days of matrices such work is slovenly and obsolete. It is pleasant to note that at least one of his hearers, Dr. E. C. Rice, took decided objection to the method. Another quaint method was advocated by Wm. H. Trueman as follows: "In many cases where amalgam proves of much value, the overlapping edges at the cervical border pressing down tc the gum tissue and the large contact surface any attempt to polish would remove an essential to its best purpose. This is the case where there has been extensive gum-recession, and where large interdental spaces exist. The amalgam filling this space tends to cleanliness, and its close adaptation to the surface of the adjoining tooth where the teeth have become loosened by loss of tooth-supporting tissue is as important to the patient's comforable use of the tooth as is its occluding cavity of decay." Dr. Trueman suggested that this method had been called slovenly (?), but protested that it was "commendable practice" (!!!). Another curious way to use amalgam was by making an inlay in a matrix of gold, removing and allowing to harden, then polishing and cementing to place. The author of this method, Dr. Ottolengui, however, evidently did not have great faith in it, as in discussion he said: "Since the discussion, I do not think it so worthy." Well, we should trust not. In noticing this article of Dr. Ottolengui's it must not be thought that all that was said in the paper or its discussion was crude, for very many admirable things were said. Dr. Ottolengui's most admirable points were as follows: "Amalgam is not a 'cheap' filling;" "The failure of amalgam is chargeable to faulty manipulation rather than to the material *per se;*" "The charge should be appropriate to the service rendered;" "Cavity preparation has no relation to the material to be inserted;" "In opposite approximate fillings, fill one cavity at the first sitting and polish it at the next before filling the second."

THE MECHANICAL SEPARATOR.

By Garrett Newkirk, M.D., Los Angeles, Cal.
Dean, and Professor of Operative Dentistry, College of Dentistry, University of Southern California.

My reasons for choosing this subject for a short paper are two: First, it is important; second, it has been quite ignored for some years in our journalistic prints.

It is a truism that free separation, plenty of room, is essential to the proper filling of proximal cavities in teeth and the restoration of natural contour.

This involves two things: first, the *obtaining* of the space, which may be by slow pressure, necessary in many cases; second, the *holding* of the space, completely and steadily during the operation. These are two distinct and equally important considerations. In many cases both can be met by the mechanical separator at one sitting, in others only the latter. There are no rules universal not subject to exception. Neither is there a "universal" separator which can be depended on to take the place of those adapted to the different regions of the mouth. The "universal" separator is better than none, very often useful but its principal play is to the pocket-book. It says, "Get me! I will do *all* the work done by the various forms, and *save the cost.*" It appeals to the general desire of mankind to get the most for the least, and something for nothing; an idea full of delusions and snares.

All the single-bow separators have this objectionable feature, that one point crowds into the proximal space precisely where it is not wanted—down upon the gum, also preventing the passage of finishing strips and instruments.

The only complete representation we have of mechanical separation finds expression in the set invented by Dr. S. G. Perry, originally four in number, now six. These cost with box and wrenches $24. About $3 of this amount is for the last-named. No need for the case, and any one ought to be able to make his own wrenches. The set proper, less frills, ought to be about $20.

The advantages of the Perry set are that there is something adapted to every place, carefully thought out, and most ingeniously applied. Few are cases indeed where, by reason of unusual forms or relations of the teeth, these separators will not be applicable. As to cost, I can hardly imagine a price on these instruments that would tempt me to get on without them.

Let me enumerate briefly their various spheres of usefulness.

1.—Examination of Teeth for Decay.

It is not the rule, I think, that examinations are thorough enough for small cavities and incipient decay upon the proximal surfaces of the teeth near the contact points. Very frequently, owing to the width of their surfaces and their close relations, it is out of the question that an accurate examination can be made without a separation which will admit the rays of light freely to the suspected points. As a rule, I believe, the examiner is disposed to satisfy himself and his patient with the passage of a piece of silk. If this can be done without cutting or a perceptible fraying of the thread, he assumes that no decay exists. And the supposition is quite as apt to be wrong as right. No examination has a right to be called complete unless the operator has inspected every danger point upon every tooth, and *knows,* not guesses, the condition of each.

In many cases this cannot be done without the application of the rubber dam and mechanical separation of the proximal surfaces. This applies to the upper teeth from the mesial line to the last intermolar space; and to the lower generally with the exception of the inter-incisal and cuspid.

Whenever there is uncertainty and question, it is easy, only the matter of a little time, to apply the dam to six or more teeth, then go from point to point with the separator, obtaining easily sufficient space for the examination needed without pain and but little discomfort to the patient. If a surface is found which needs but polishing, this may be done at once with oiled strips. If a considerable cavity is discovered a thin chisel and small bur opens it up for the insertion of gutta-percha as a further separator and temporary stopping. When the operator gets through with his series of explorations, he *knows* that he has been *thorough* and done the right thing.

2. In Preparation of Cavities.

Not only is added space necessary for the insertion of fillings, but previous to that for the proper preparation of the cavity. Here the Perry separator will often give it just the room needed without previous wedging, or it will *hold* and increase the space already obtained. And it holds the teeth *steady*, so that the instrument employed, chisel, excavator or bur, can be used with greater accuracy and less pain, dread or stress on the part of the patient. This, especially in cases where the teeth are not firm, is a very important consideration.

3. Preliminary to Wedging and Temporary Stoppings.

When it is evident that sufficient space cannot be had with the mechanical separator alone, and where faults of previous operations have to be remedied, where a closed approximal space needs to be restored, the Perry separator is valuable at the beginning. It is less painful to the patient to open sufficiently for wood or gutta-percha or cotton, than to bear the teasing, gnawing, tormenting piece of rubber band, so often inserted for that purpose.

And when cavities are opened up sufficiently for gutta-percha stoppings, which are also to act as wedges, the separators are, with me, indispensable in a large proportion of cases.

4. For the Insertion of Gold Fillings.

Just as for cavity preparation, the Perry separator holds the teeth in steady position, makes the plugger more accurate and positive, while lessening the discomfort of the patient, always providing, of course, that the screw force is carefully applied and stopped at the proper point. No one is justified, ever, in making his patient really suffer by the use of a mechanical separator. It is not necessary.

In the insertion of gold fillings the application of the instrument should be gentle at first, then slightly increased from time to time as the filling progresses, to the full extension of the contact point and final finish of the same. Then the separator may be employed as a test. Removing the force, allowing the teeth to fall together, one may judge in a few moments, by using the floss silk, whether the contour is too full or just right. If the former, the screw is turned on again, and a little more removed with thin, fine, oiled cuttle-fish strips. The perfect point of contact cannot, as we know, *always* be determined at once. Days afterward, it may be, the discovery will be made by the patient or the operator that the floss cannot be passed at all. The separator can be placed, without the dam, and the tape again passed as beforesaid. How much better this method than the oft-used scratching saw or the file, which invariably cuts away too much, leaving the latter condition worse than the first.

Again, with due deference to certain gentlemen, I will say, for one, that although I do myself occasionally use a matrix for gold fillings, I have just a little more confidence in those built up without it. The separator enables us to dispense with the matrix in most cases where we might be otherwise tempted to employ it.

5. Preparatory to Filling with Amalgam or Cement.

The separator gives the advantages before described for preparation and initial space. The teeth are held apart and steady up to the moment of applying the matrix, which should, I believe, always be employed in proximo-occlusal fillings of plastic materials. Let me deviate in passing to say that the king of all matrices for everyday use is the *Ivory;* for it fits, and demands only one interproximal space for itself. Like every other matrix, it requires occasionally the supplemental wedge, wood or steel, at the cervical border. When relaxed it comes out easily, "letting go" at all points but the "contact," from which it is easily worked free.

For the finishing of amalgam fillings in the contact region, which should never be done until the material is hard, the sepa- gold.

6. Some Little Points to Remember.

To adjust the separator easily and deftly takes practice, and the operator must not expect smooth sailing in every case at the first. With the bicuspid and molar forms, the lip is likely to be crowded upward uncomfortably. To relieve this at once a smooth steel instrument should be inserted at the angle of the mouth and passed gently forward, lifting the lip over.

Whenever the separating points go higher than they should, crowding uncomfortably on the short tissues, the screws should be relaxed, the points held in the right position, while pieces of gutta-percha are warmed and crowded under the bows. When these are hard (and the hardening may be hastened with the chip-blower), the upward movement of the points is prevented, and separation proceeded with as usual.

Of course the force must be applied, not all at once, but a little at a time with periods of rest. Only tact and care are necessary. One has to be governed by the conditions present in each case, the sensations of the patient, the mobility of the teeth, and amount of space required.

The screws should be kept carefully oiled, both for ease of working and to prevent their wearing out.

Here, as in relation to all operative procedures, patients have their idiosyncrasies. One will disclaim any sense of discomfort whatever, another suffers more or fears that he will. Once a year, perhaps, a patient will present with whom the separator is impracticable, by reason of unusual sensitiveness of the peridental tissues, or nervous timidity.

Finally, much depends upon our attitude when the instrument is first used. We must tell the patient just what we wish to do and why, and what he may expect.

If we explain to the patient, old or young, the necessity of space, the advantages of the separator, often over days of slow wedging; if we assure them that we shall be careful not to carry the pressure beyond the point of reasonable endurance on their part; if we are likewise careful to consult with him or her as to the degree of pressure that may be easily borne, we shall have very little trouble in the use of this most valuable assistant, *the mechanical separator.*

Since writing the above I have had a patient presenting a case where the practical application of the separator was well demonstrated.

A lady tourist, from an eastern city, called to have me, if possible, reset a porcelain inlay in a central incisor, distal surface.

It was loose, sure enough, but prevented from falling out by the adjacent lateral, which was a Logan crown.

I said, " The inlay was certainly inserted before the crown in this case."

She replied that such was the case. At first it seemed quite impossible that the inlay could be taken out intact without injury to the cavity margin, or without removing the crown. It occurred to me, however, to see what the Perry separator would do.

In a few minutes' time, and with no serious discomfort to the patient, sufficient space had been obtained for the easy removal of the inlay and for its replacement in a manner which I hope will make it permanent.

Of course, one might have succeeded by the use of a wooden wedge, but certainly not with the same positiveness or satisfaction.

NOTE.

Still later, in a conversation with Dr. G. V. Black, he called my attention to the S. S. White " Universal " which I have never tried practically. Dr. Black thinks that it *will* do the work if properly applied in nearly every instance, and that it is the most free from objectionable features of any of its class. I have since examined this separator. It seems to represent an attempt, and a most ingenious one, to carry out the Perry principle in a single instrument; but it is necessarily expensive, larger and more complicated, and it seems to me far preferable that one should shrink his purse or stretch his credit just a little more and possess the real thing, a source of daily comfort and " a joy forever."—*Dental Summary.*

DON'TS IN PORCELAIN INLAYS.

By W. T. Reeves, D.D.S., Chicago, Illinois.

Read before the Northern Ohio Dental Society, June, 1903

Don'ts are sometimes more important than doing, and to-day I shall present the subject from a negative point of view.

Don't wait for a higher degree of perfection in inlay work before entering upon the work, because the time is at hand when every one should be prepared to do some of his filling with porcelain. There are numerous places where porcelain is the only material indicated, and where to-day you should no more think of putting gold than you would think of putting amalgam. Besides, your patients are fast finding out that something better than gold can be put in their front teeth, something that harmonizes with the tooth, that is less taxation upon their nervous system to prepare the cavity, and altogether a desirable thing to have; they are asking for this kind of work, and if you are not prepared to do the work, they go to some one who is. You cannot hold them much longer with the cry of " fad, fad," that rolls off like " water from a duck's back." They have seen porcelain inlays in some friend's mouth and know that they are doing all right. They size you up about right, that you can't do the work is the reason you cry " fad." Don't put it off any longer, but prepare yourself to do porcelain inlays.

Don't think that the esthetic is the only reason that porcelain should be used. That is one of the least of its many points of excellency. There is compatibility of material to tooth. Porcelain is the only permanent material we have that possesses this quality. Enough could be said on this one quality to make a paper by itself. There is permanency and preservation, two conditions that porcelain brings to the tooth to a greater extent than any other material.

Then there is ease of insertion, and that is a great feature in any operation—ease for both patient and operator. How many defective operations are allowed to pass because the operator is physically exhausted, or the patient is near nervous collapse, from the strain of a long, tedious gold operation? With porcelain all is different; patients hardly realize that they have been to the dentist's for two or three hours (until they get the bill) and leave the office with no dread of the future sitting. If it had been a gold operation, necessity is the only thing that would bring them back.

Don't make the mistake of thinking that porcelain is only indicated in a few places, and those of the simple order. *Porcelain is only limited in range of application by the limitations of the* *operator.* It is equally good for the young, the middle-aged and the old; everywhere and under all conditions, it is doing excellent service and the more you use it the more you will find out and you will not be sorry.

Don't make up your opinion or judge by the failures you may have seen. If you decided what materials you would use and upon your *modus operandi* by the failures that come under your observation, would you be using gold to-day? I think not. You have no means of knowing what was the cause that brought about the failure. It may have been gross incompetency on the part of the operator; he may have known nothing of the operative technic and still less of the material he was using. If, when he was a student, he had tried to accomplish an equal task with gold, with no better preparation, you would have laughed at him. Without thorough technic preparation, no better results should be expected than from the student with his first gold filling.

Don't think an outfit of bodies and a furnace is all there is to it; that when you have procured these you can begin on the next patient that comes in and make an inlay, for you will be grievously disappointed.

Don't think that watching a clinic gives you all the insight you need of the technic, and that you can go to your office and do the same thing, for you will find that you are up against it; that what looked so easy, is quite another thing when you try it on a patient; that there are lots of little details that go to make up the sum total of success that have escaped you, and that you are stumped to know what to do. Your patient will soon discover that you are stumbling along, and will lose confidence in your ability to successfully accomplish the task; that would still further hamper you, and the result would be a failure. Your patients would realize that you had been experimenting on them. It is all right to experiment on some one else, but no one likes to be experimented on. Prepare yourself by the best technic instructions you can get; that puts you in possession of his experimentation and experience, and you begin at the point your instructor has attained. Go to the laboratory and by careful dummy-work assimilate those instructions so that your patient will not know whether it is your first, tenth, or hundredth inlay. If it is not possible for you to make your start through this source, begin by reading and studying the literature up-to-date; try and sift the wheat from the chaff; adopt that which seems best to you; prove it by your work in the laboratory. Hold fast to the good and discard that which is inefficient in your hands, even if you have to begin all over again. This is a slower method, but what one gets by hard knocks usually sticks, and success follows earnest effort.

Don't think you can gain the knowledge of how to bake porcelain by hearsay or reading. Every one must gain this through personal experience; the different stages of fusing can be shown and described, but experimentation is the only source of knowledge that will enable one to tell by observation just what degree of fusing has taken place. Porcelain may be a hard master, but, if understood, is a willing servant.

Don't pin your faith to what you have seen demonstrated at a table clinic. There are several methods that make awful nice table clinics—interesting, entertaining; yes, fascinating—but if it was a practical inlay they were making for a patient, you would find the item of time was too expensive a feature for the busy man to seriously think of following.

Don't worship at golden altars or follow after false gods. Look on high (high-fusing porcelain) for your guiding star, and you will not have put your confidence in something that will fail you, and you will not be trailing behind.

Don't try to compound bodies. There are manufacturers who have made this a life study, and they can do this much better than you can ever hope to do. Learn the different bodies so that you can produce results. Study along this line will benefit yourself and the profession.

Don't try to make an inlay without first securing working space before beginning the operation. No more separation is needed than should be had for any other material, but it is absolutely necessary to have working space. You can't put in a flat inlay, but having proper space you will restore perfect contour, perfect contact points and preserve the interproximal space better than with any other material. These three conditions will be appreciated by your patients, for it will put their teeth in a comfortable condition for masticating. You will be benefited and the standard of your work raised, for, finding how much your patients appreciate this change, you will separate for all other work and not consider it time wasted.

Don't set an inlay that is not a perfect fit at all points. With porcelain it is possible for you to know, before it is too late to correct, whether there is any defect in adaptation, contour or color; if lacking in adaptation or contour make another inlay. There is no physical strain upon yourself or patient to keep you from doing so. Many a defective piece of work is allowed to go through because the operator is not in condition to make a second gold filling. In making a second inlay the effect upon the operator is two-fold; a failure overcome is a stimulus to renewed effort, and the moral tone of the operator has been raised.

Don't try to select the color your inlay is to be by taking the tooth-guide and selecting a facing that seems to match the tooth, and then working to that color, for you will be working to something once removed from the original, and no matter how well it might harmonize with the adjoining teeth if used as a crown, it would not match either tooth if a corner of the facing was cut off and placed against the tooth.

Don't take the shade-guide furnished with each outfit of bodies and try to select one that is a match for the tooth. The colors in the tooth vary from top to bottom, and you must have them in the same relative position in your inlay, in order to have inlay match tooth. Use the shade-guide that by comparison with the tooth you can determine what colors you see in tooth. The shade-guide gives you the color the body will be if you bake the same bulk and to a full glaze; you can get any shade of a given color by the thickness of the layer you bake.

Don't bake your inlay all of one body, even if you could make it in one baking, for your inlay would only match at one point and at the others would be off color, and then you would be up against what they call the " shadow problem."

Build in layers, bake in your colors strong enough that reflecting through an overlying or enamel layer gives you the colors you want; this will give you translucency and is the only way you can produce translucency; baking in layers, the strata breaks up light absorption and refraction and your inlay will look the same from all points of view. Baking in layers will prevent the cement showing through to the greatest extent possible.

Don't grind an inlay after it is set on any surface other than the grinding surface of molars and bicuspids, and the cutting edges of anterior teeth. All grinding that is necessary should be done before the matrix is removed, and then returned to the furnace and glazed. The glazed surface of porcelain is a protection to adjoining tooth surfaces.

Don't undercut your inlay with diamond disc or knife-edge stones; use hydrofluoric acid; that will remove the glaze and leave a roughened surface that cement will adhere to, and not take away from close adaptation.

Don't try to neutralize the acid. There is a fine, palpable powder as the result of the action of the acid, and this must be removed mechanically or it will interfere with the retention of the inlay; use water and a stiff bristle brush.

Don't set an inlay without putting on the rubber dam wherever it is possible to do so. Always have pressure either by wedge or ligature, and leave thirty minutes before removing dam; cement setting under pressure gives best results and prevents expansion making a noticeable joint.

Don't remove the excess cement until after you have removed the dam; after the saliva has bathed the tooth, the cement will come off easily with no danger of dislodging the inlay.

Don't try to remove the slight line of cement at the joint; let that wear away; it will wear away in five or six days.

Don't fail to tell your patient that the tooth has dried out under the rubber dam and is several shades lighter, and that it will be several hours before it is back to color, and that the inlay will look better a week hence than it does the first day.

Don't wait for others to discuss the subject or ask questions. A question that may seem trivial to you may be what lots of others would like to have answered.—*Dental Summary.*

THE FOURTH INTERNATIONAL DENTAL CONGRESS 1904.

The close of 1903 naturally brings the dental mind to the consideration of what may possibly take place during the coming year of 1904. The year just closing has been fruitful in many directions, and it is believed it has seen dentistry steadily advancing towards the goal that has been so strenuously worked for during many years prior to the present.

The most notable effort of 1903 has been the settlement of the controversy pending for over a year between the International Dental Federation and its committee and the committee appointed by the National Dental Association to arrange for the Congress of 1904. This controversy, which at one time was acute, has been amicably settled, and the preliminary work of the Congress is being pushed forward with an energy that gives every evidence of success. There was a small local cloud not as big "as a man's hand" that hovered over St. Louis, but it is believed that even that has measurably been dissipated. Outsiders have had some difficulty in understanding what it was all about, but at no time did it endanger the success of the Congress. That has for its promotion a world-wide interest and can have nothing to do with local differences, only so far as a united local support is much to be desired, as it adds materially to the comfort of visitors.

At the present writing there will be but nine months in which to complete the preparation of the Congress, a time certainly limited for all that will be required. An effort should be made to secure papers of an original character. The old and tried subjects that have appeared at congress after congress, and convention after convention, might possibly be consigned to obscurity. If there is one thing trying to the patience of the average regular attendant at conventions, it is to have served up repeatedly the professional dishes that have done duty so frequently as to be no longer mentally appetizing. If the committee on papers will use a wise discretion, they will not only eliminate these, but will equally limit the number prepared on any one subject. It is very possible that the Congress will be inundated with papers on inlays and porcelain. There should be a certain amount of this, but unless the papers presented have at least the flavor of originality, they might profitably be returned to the writers. The subject of porcelain in its various phases, while not yet perfected, may profitably be left to the masters of the art, and papers from these, in all lands, must always be acceptable.

The great need of dentistry at the present time is original work, and while it is true that there is more of this than at any former period, it is not sufficiently extended, and the literature, as presented in dental periodicals, is not as a whole of a character to increase the feeling of gratification with the progress of the profession.

If the Congress can be made a starting-point for dentistry in the twentieth century, it will have accomplished much. The writer is, therefore, anxious that it shall prove, through its results, an incentive to scientific work. The younger generation of dentists need this encouragement. The product of the dental colleges throughout the world is of a higher character than at any former period, and its capability for greater results is equally pronounced. The character of the men having this in charge gives the assurance that this will be carefully guarded, and it is hoped that the suggestion may not be needed. It must be remembered, however, that it will be a serious disappointment if the Congress does not give us something to build upon before the time arrives for the next great international convention.

The world expects much of dentistry at this period in its history. It is recognized, as never before, as a prominent and important branch of the healing art, and our various educational means to this end must be continually advanced to meet this growing demand, and this applies with equal force to local, national, and international organizations.

Criticism in advance of performance is always an ungracious act, and the writer has no cause to exercise this function upon the preliminary work already accomplished. It has been entirely satisfactory, and gives promise of important results. It is, however, well to have the opinion of all shades of dental thought upon what is or is not expected of a congress such as this. The dentists of America are responsible for its success, and in order to accomplish this they must make an exhibit of dentistry as it stands to-day in this country. If we have anything that our *confreres* in other countries do not possess it is our duty to present it. Let our work speak for itself. No claim is made that American dentistry, if there be such a thing, is any better than dentistry the world over. This claim has never been made by dentists upon this side of the ocean, although it has frequently been charged as a fact, and a very discreditable fact it would be if true. That which the dentists of this part of the world do insist upon is, that they have earnestly labored to unite dentistry into a progressive profession. Whether we are equal in this respect to other nationalities, or in advance of them, is a matter of no moment. It is believed that the dental world is rapidly growing, and narrow, contracted ideas are giving way to broader conceptions of professional duty and fraternal regard.

One of the important duties of a congress such as this is to foster the true cosmopolitan spirit, to unify the dental mind, and in this way mould the calling into a thoroughly composite body in which the several parts are indistinguishable. It will probably always be impossible to establish standards of training acceptable to all nationalities, but it may be possible to reach definite conclusions as to what constitutes a cultured dentist, and when that has been accomplished it will not be based on an education strictly medical or upon a training strictly dental. To eliminate these two extremes is a part of the mission of international dental congresses. It is to be expected, and certainly it is earnestly desired, that the entire civilized world will send its delegates to St. Louis in September, 1904, and the assurance can be extended that they will receive a cordial reception, and, further, that the home organizations will earnestly co-operate in enlarging the field of observation and practice in dentistry, in order that it may become more and more, in all nationalities, a body of cultured, scientific men earnestly laboring, without selfishness, to lessen some of the ills of suffering humanity.—*International Dental Journal.*

LOGAN CROWNS AND REAMING OUT ROOT CANALS

By Dr. C. L. Hungerford.

I agree with Dr. McMillen that we cannot make any crown as good as Logan crown, of course, and the fundamental principles of their adjustment, as laid down by Dr. McMillen, I can concur in, with the one exception, and that is concerning the ledge that might be back of the crown, and the cutting of the back portion away. Just in proportion as the back of the root is left high above the gum, is there extra strain brought to bear upon the anterior portion of the root and it is more likely to be split. Theoretically, I would prefer to set the crowns above the gum, but considering that we must have them under the free margin of the gum anteriorly, I feel the necessity of grinding them, at least that far posteriorly. There is no necessity for boring through so many of these roots. In the past I have bored through many of them, but do not do so any more, and I do not care how crooked that root is or how twisted or how turned, it is immaterial to me; I know just how far I can go and I know just exactly when I have to stop. It occurred to me one day quite accidentally some years ago, and I have tried to speak of it every chance I have had ; one day, in adjusting a band to the roots of the tooth, I found I could not throw the electric light into it far enough, and accidentally the lamp slipped alongside of the gums and the whole cavity became illuminated. I passed it up and down the roots and I saw where those canals were, and I reamed those canals out with my broaches, and I could follow them. This can easily be done with one of the ordinary electric lamps that are manufactured and there is no discomfort occasioned by the heat at all. You can pass them up and down the gum and look into the cavity and you can see if your root is twisted, and if it is turned off to one side, and you know if you are going to go much farther you are going to cut through the side of the root, and incidentally you can see if there is a broken broach at the apex of the tooth, and possibly can get it out. When that canal is opened up and dried out, with the electric light put upon the margin of the gum, you can see whether the canal is cleaned out or not and see whether there is gutta-percha in there or not, or a broken broach or anything of that kind.

I use the twist drills because they bore more rapidly than any other; if I find the root is turning, I stop there and cut my pin off to where the root starts to turn. I think the Logan crown one of the very best crowns, and it beats in color anything I can possibly do. I cannot possibly see how any dentist, following his vocation, can possibly hope to compete with the great manufacturers of porcelain or possibly hope to equal in color or in density or in strength the teeth manufactured by them. The Logan crown is one of the most serviceable products turned out by the White people, and I think any method tending to set the Logan crown in better shape, in better position and better adaptation is an advancement that should be encouraged by every member of the profession.—*Western Dental Journal.*

DETERMINING THE MELTING POINT OF RESINS AND WAXES.

Kraemer and Sarthou give the following simple method for determining with some accuracy the melting point of resins, paraffins, waxes and similar bodies. Twenty gm. of the substance is carefully melted on an oil bath, in a small capsule of such size that the melted liquid has a depth of 10 mm. An open glass tube having a diameter of 7 or 8 m. is then dipped into the melted liquid, the upper end is then closed with the finger, and the contained liquid withdrawn and allowed to solidify. Five gm. of mercury is then poured into the tube on top of the solidified cylinder of material. This is then suspended in a beaker containing cold water ; a thermometer is so placed therein that its bulb is adjacent to the solid cylinder of the substance. This beaker is immersed in another of larger size, also containing water, which serves as the water-bath. The whole apparatus is now cautiously heated and the precise moment noted when the weight of the mercury column displaces the cylinder of wax or other substance under observation. This is taken as the melting point required.—*Nouv Remedes*, 19, 327, after *Chem. Industrie.—British Journal of Dental Science.*

CAVITY LINING

By Dr. E. K. Wedelstaedt.

There is a great deal that can be said in regard to what the essayist has called our attention to. The first thing I wish to do is to compliment the essayist on his advanced ideas. It gave me the greatest pleasure to read the paper, which I had the privilege of doing before it was delivered here, and it gives me still more pleasure to say that I am in absolute harmony with a number of things that he has seen fit to advance. If you will compare the thoughts which have been presented for our consideration, with those contained in the average published essay, you can readily note what a long step in advance the dental profession in the West has taken. I seem to be perfectly at home here, for this is the general tenor of the essays of the members of the Black Club.

In all cavities filled with cement, it makes no difference for what purpose the cement is used; if the pulp is alive in that tooth, the axial or pulpal wall, whichever is being dealt with, is covered with a thin coating of varnish. This varnish does not extend to the margins of the cavity. Two things I wish particularly to commend:

First. Cements should always be given a chance to harden before a metal filling is placed over them. Experiment has proved that with time they get harder, that they change in form, and that great care should be used in handling them. In my own practice, I do not place a metal filling over cement until it has fully hardened.

Second. Under no circumstances, I care not what the circumstances are, is a man ever justified in making a metal filling on a whole mass of gutta-percha. If this is done, it is but a question of time before trouble will ensue and that filling fail. Occasionally a cavity will present itself in the proximal surface where the decay has extended for a considerable distance along the root. I have, in such cases, filled the gingival portion of that cavity with gutta-percha, and then made my metal filling on top of the gutta-percha.

To go back to the subject of varnishes. I do occasionally use varnish against an axial or pulpal wall of dentine where a metal filling is to be made.

Should I make any use of asbestos or the asbestos and tin caps, either would be soaked in varnish, chloro-percha or cement, prior to being placed in any cavity. I should wish all the air spaces out of the material before a metal filling was placed on it. Years ago I made much use of these materials, and had some trouble until I learned how to use them both.—*Western Dental Journal.*

THE BUFFALO MEETINGS.

Commencing December 28th, with the meeting of the Institute of Dental Pedagogics, the succeeding six days was a busy time for the visiting dentists, for immediately following the teachers' meeting, the National Association of Dental Faculties convened in special session, and following that the American Society of Orthodontists. In the intermediate hours the national Dental Congress committee of fifteen labored assiduously, so that for a few, at least, it was reminded that "there is no rest for the wicked." There was a large attendance, no doubt brought about by the special call for the Faculties' Meeting and the great interest as to what action might be taken respecting the proposition to abandon the four-years' course, which has threatened a return to "homespun." It was a "call to the wild," and brought together the jolliest good-natured lot we have met for many a day. A "mid-winter" meeting always seems appropriate, and "give and take" is the order of the holiday season. There was only one drawback—the absence of Dr. Barrett, he who a year ago, in his big-hearted way, invited the pedagogues to meet in his home town, Buffalo. We were there, but he was absent.

The programme of the pedagogues was carried out as published, and the discussions which aroused the most interest centered around the curriculum and the four-years' course, and was introduced in the paper by Dr. Geo. E. Hunt upon "The Dental Curriculum." From the time of the reading of that paper on Monday until the adjournment of the Faculties' Association at 7 o'clock Wednesday evening, the engrossing subject was the change to a three-years' course of nine months, or a return to the three-years' course of seven months. To the whole question added interest had been given by a circular letter to college men upon the subject, "Let Us All Be Honest," by Dr. G. S. Junkerman, of Cincinnati, Ohio, which satirizes the four-years' course; and a communication from Dr. C. C. Chittenden, chairman of the Committee on Colleges of the National Examiners' Association, desiring information from the various colleges as to their position respecting a return to the three-years' course. The latter being held a threat that any so-called backward step will result in blacklisting colleges voting against the continuance of the four-years' course. We are not, however, informed of any such intention on the part of the boards, but the colleges think it a fair surmise that the letter of Chairman Chittenden was given as a warning.

It will, therefore, be readily appreciated that there was "something in the wintry air" at Buffalo, and a good modicum of ill-concealed anxiety on the part of nearly every college man was apparent. After the discussion was under way, it very soon became obvious that no operative change could be made in the length of the course before the 1904 Annual Faculties' Meeting, and at that time it will be possible to return to the three-years course ot seven months (resolution offered by Dr. G. E. Hunt at Asheville) or institute a four-years course of six months (resolution introduced by Dr. S. W. Foster, at Asheville). If these resolutions fail of adoption, then of course the time will remain as at present, and no change will be probable for several years. Although no definite action was found possible at Buffalo—resolution after resolution looking to an immediate change in the course, or a promise to change, being declared out of order—yet there was no bar placed upon the discussion of the whole subject, the presiding officer ruling that under the call such discussion was in order. So there was much talk, covering a wide range. There were first the advocates of a three-years course of nine months each, led by Dr. Geo. E. Hunt, of Indianapolis, and Dr. Frank L. Platt, of San Francisco. This was vigorously opposed by Dr. G. V. Black, of Chicago, and others, who contended that a nine-months' session was impossible in many schools, and strenuously opposed any change in the existing course. Drs. A. O. Hunt and L. P. Bethel spoke in favor of the count system of giving credits for time and accomplished results, whether in three or four years. Others favored a return to three years of seven months and a preliminary examination which would be of a higher grade and which would especially test the applicant's ability along mechanical lines. It will be seen that there is considerable division of opinion upon the subject, and it is a difficult thing to determine what will be the vote on the two propositions which will be before the Annual Faculties' Meeting this year. Before adjournment a motion was carried which directed the Executive Committee, if possible, to call the annual meeting in June.

Notice of the Buffalo meetings would be very incomplete without a statement of the lavish entertainment given visitors by the dentists of Buffalo and vicinity. Tuesday evening a great banquet was given at the Iroquois Hotel. Wednesday a lunch at the Dental Department of the Buffalo University. The Buffalo Dental Manufacturing Company entertained with a trip and reception at their ware-rooms, and wives of Buffalc dentists entertained the visiting ladies with lunches, musicales and theatre parties. As hosts, the Buffalo people are without peers. —*Western Dental Journal.*

Proceedings of Dental Societies

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The National Association of Dental Examiners will hold their annual meeting in the Coliseum Building, corner 13th and Olive streets, St. Louis, Mo., on the 25th, 26th, and 27th of August, beginning promptly at 10 a.m. Telephone and telegraph in the building. Hotel accommodations will be secured for the members.

Very truly,
CHAS. A. MEEKER,
Secretary-Treasurer.

NEW JERSEY DENTAL SOCIETY.

The New Jersey State Dental Society will hold their annual convention in the Auditorium, at Asbury Park, July 21st, 22nd and 23rd. The Exhibit Committee are prepared to allot space to exhibitors. All applications should be made to the Chairman,

Princeton, N.J. DR. W. G. CHASE.

NEW DENTAL SOCIETY.

The French-speaking dentists of the Province of Quebec have established a dental society called "La Societe d'Odontologie Canadienne-Francaise." The society has a monthly meeting in the rooms of the Dental College of the Province of Quebec. The elected officers are:

President, Dr. Joseph Nolin, Montreal; 1st Vice-Pres., A. A. Lantier, Quebec; 2nd Vice-Pres., J. G. A. Gendreau, Montreal; Secretary-Treasurer, G. H. Kent, Montreal; Secretary-Correspondent, Eudore Dubeau, Montreal.

On January 9th the meeting was held in Quebec. A banquet took place in the Chateau Frontenac Hotel, and a lecture was given by Dr. S. Gandreau. On February 6th, the annual dinner took place at Place Viger Hotel, Montreal.

EUDORE DUBEAU, L.D.S. D.D.S.,
Corresponding Secretary.

Review

Essay on the Irregularities of the Teeth. With Special Reference to a Theory of Causation and the Principles of Prevention and Treatment. By J. SIM WALLACE, D.Sc., M.D., L.D.S., Hon. Dental Surgeon to the West End Hospital for Nervous Diseases, and Assistant Dental Surgeon National Dental Hospital. London: Dental Manufacturing Co., Limited, 6-10 Lexington Street, Golden Square, London, E.C.

This is a work of over 160 pages, which presents a theory of the causes of irregularities of the teeth. The subject is well handled, clearly written, well edited and published. The book is made up of essays published in the *Dental Record*, of London, England. The author accounts for almost all irregularities on the supposition that the tongue governs the size and shape of the whole oral cavity. Where the tongue is small there will be crowding of the teeth, and where large spaces between the teeth. In the treatment of irregularities he suggests exercise for the tongue. He very properly points out that there should be an exact poise between the tongue and cheeks. He states what has been too little recognized, that before teeth can be expected to remain after correction (1) there must be a retention of each tooth by its approximal teeth; (2) the retention of each tooth by the occluding teeth; (3) the retention of each tooth by the tongue on the one side, and (4) by the lips and cheeks on the other. While every irregularity, perhaps, cannot be accounted for and treated on the basis of some malformation of the tongue, yet we must admit that the tongue is one of the greatest factors in the etiology of irregularities.

ROYAL COLLEGE OF DENTAL SURGEONS
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The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

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EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
93 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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ARE DENTISTS UP AND DOING?

During the first two days of February the Minister of Education for Ontario, Hon. Richard Harcourt, called together the Provincial Boards of Health of Ontario and others interested in the physical development of the rising generations in Canada. At the meeting it was pointed out by Dr. Sheard that epidemics of diphtheria and other diseases are often traceable to the common drinking cup in the public schools. Some time was spent in discussing those conditions which tend to interfere with the development of the child. It did not seem to have crossed the minds of those present that the condition of the oral cavity, which is the portal for most diseases, had anything to do with the health and development of children. Nor did they at all consider the condition of the teeth of any importance to good health.

Is the dental profession taking its proper place in society, if the public, and particularly those in high places, do not know what bearing a clean, healthy mouth has on the development of a child? Are we doing our duty, if such ignorance is allowed to go unchallenged? It does not appear from the report that a dentist was even thought of by the Minister in connection with a clean, healthy oral cavity. These men have gotten their notions of what a dentist knows and what he can do from those they have met, which does not say much for the dentists who attend the wants of our law-makers in Ontario. It is about time the dental profession should take a hand in public doings, and leave the running of euchre parties and Sunday School tea-meetings to smaller fry. There is certainly a deterioration in the physique of the rising generations in Canada, and the dentist has, perhaps, the largest opportunity to grapple with the situation. Are we not of large enough bore to grasp the situation? I think so. At some future time I may present evidences of what dentistry has done for, at least, a hundred or so young men who are now in attendance at the Dental College. I am sorry it is not much to our credit.

BRITISH DENTAL EXAMINATIONS.

Full and free discussion of every phase of dental education in Great Britain seems to be the legitimate privilege of every licentiate and even laymen. There is not a dental meeting of any note, or an issue of a British dental publication that does not make some reference to the state of dental education. There seems to be an unrest in affairs dental. In fact, it would seem that every aspect of the subject is freely discussed. There seems to be no ban on discussion. There is hardly a dental publication in America which would presume to criticize a dental school, or a state board, while in Great Britain it is quite the right thing to do. It does not follow that because the methods of education in a country are discussed by its own people that they are wholly faulty, nor does it follow that those which are not discussed are perfect. The very opposite is most likely true. Apprenticeship, examinations, appointment of examiners, the teaching of hospitals, the Dental Act, and the management of the journal of the Association, are fit subjects for full and free discussion.

There is no doubt but that the discussion of these subjects is of great benefit. The *Dental Record* for December points out two conditions which need consideration. Students in dentistry have been examined on such out-of-the-field subjects as hernia, retention of urine, spina bifida, club-foot, appendicitis, stones in the bladder, and compression of the brain. The author doubts if a knowledge of these subjects is as essential to the dentist as some others might be. He also points out that there never has been an examiner appointed outside of London, and only recently outside of Leicester Square Hospital, while the Dean takes pride in having passed a larger percentage of candidates than any other hospital. This only shows that for all concerned it is just as well for the examiners not to be the teachers when a license to practise depends upon the results.

Below, we print the examination papers in dentistry, set by the Royal College of Surgeons of Ireland. This ought to be a very satisfactory examination from the candidates' point of view:

WRITTEN QUESTIONS.

Mechanical Dentistry.

1. Clearly describe four methods of taking impressions of an edentulous mouth, with and without complications, such as unusual hardness or softness of the palate, and the alveolar processes and muscular attachments.

2. How may the warping of a gold base-plate be prevented in the process of soldering?

3. Give the melting points, Fahrenheit, of dental porcelain, gold, platino-silver, tin, and lead.

4. In backing plate teeth, describe three different methods of dealing with the pins, and discuss their relative merits.

5. Describe what you would consider a typical case for a bridge bearing five teeth. How would you carry out the work?

Dental Surgery and Pathology.

1. What is meant by "secondary decay" of enamel? Account for its occurrence.

2. Do you consider capping an exposed pulp justifiable? Under what conditions would you apply $As_2 O_2$? Give your reasons and method in each case.

3. Describe appearance and locality of erosion and abrasion. Give causes and treatment.

4. Enumerate and describe briefly the forms of malignant disease which may be met with in the oral cavity.

5. Write a note on the prophylaxis of dental caries.

(Three questions only of each to be attempted.)

ELECTION OF NORTH-WEST COUNCIL

On February 2nd the election of five members to the Council of College of Dental Surgeons was completed by the counting of the votes cast. Mr. John A. Reid, clerk of the Executive Council (North-West Government), was returning officer, and Mr. Horace Harvey, Deputy Attorney-General, and Mr. Calder, Superintendent of Education, were scrutineers. Altogether forty-one votes were polled, of which two were spoiled, by reason of not having been witnessed. The result of the poll was as follows :

Dr. W. D. Cowan, Regina	28
Dr. P. F. Size, Moose Jaw	24
Dr. R. C. McClure, Lethbridge	23
Dr. R. Edmunds, Calgary	15
Dr. L. D. Keown, Moosomin	10
Dr. R. B. O'Sullivan, Calgary	7
Dr. F. Lackner, Didsbury	7
Dr. J. W. Hagey, Red Deer	8
Dr. R. Holt, Medicine Hat	7
Dr. A. E. Jamieson, Edmonton	6

A dozen others ranged from one to six.

This election placed the new law on trial, and so far only one defect was revealed. It consisted of one man voting five times for Dr. Edmunds, of Calgary, which, being allowed, gave him 19 votes. It was allowed, because there was no provision in the ordinance to prevent any person registering all of his five votes for one man. This will have to be guarded against in the future. The Council of the College now consists of Drs. Cowan, Size, McClure, Edmunds and Keown. We are now free from political control. The finale is satisfactory and I think we have shaped things into a Dominion registration channel, too.

The new Council meets on February 13th for business. Will send report,

Dr. T. E. Dean, of Fort William, Ont., was elected to the Council Board of his town at the recent municipal elections.

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Original Communications

PRESIDENT'S ADDRESS.

By R. E. Sparks, Kingston.

Read before the Ontario Dental Society, Feb. 8, 9, 10, 1904.

Another revolution of the cycle of time brings us to the fifteenth annual meeting of our society, to which I heartily welcome you.

Allow me to preface any remarks I may have to make by tendering you my sincere thanks for the honor conferred by electing me to the highest position in the gift of the society. The honor is doubly appreciated from the fact that my election took place at a meeting I was unable to attend. As we look back over the history of our society, we have occasion to rejoice at the progress it has made. From a modest beginning it has grown, until, in quantity and quality, it is something of which we may justly feel proud. It augurs well for the future of the society that the young men are taking such a keen interest in its conduct and welfare.

The present meeting promises to be one of unusual interest and profit. Our programme committee have been untiring in their efforts to secure for us papers and clinics of exceptional merit. It is to be hoped that members will feel free to discuss papers, clinics, and other matters coming before the society at its various sessions. Here we should discuss matters affecting dentistry in general, and such as affect dentistry in Ontario in particular.

We elect, biennially, a board of directors to manage for us the affairs of the profession in the province. It is no doubt the desire of the board to fulfil, as far as practicable, the wishes of the profession at large. But unless we voice our opinions at the society meetings, the board must deal with questions coming before it, without knowing what the mind of the profession may be. True, we may express our views in the DENTAL JOURNAL, but the discussion by such means is not likely to be at all general. A case in point: The board has added an additional college session to the requirements for qualification to practise. This materially affects both student and preceptor. The abolition or modification of the present system of indenturing students will require our attention in the near future, and should be well considered, that the best may be done for the future of the profession.

The board are negotiating with the University of Toronto for the arrangement of a course leading to L.D.S., M.D., in six years. I had hoped and urged through our district representative, that, in the readjustment of the curriculum, a course might have been arranged leading to B.A., L.D.S., in six years. Such a course has been arranged between the medical and arts faculties of McGill, Queen's, and Toronto Universities, leading to B.A., M.D.

We have every facility for producing good dentists, but if we may hope to maintain a position among the learned professions, we must have in our ranks men of learning. We have but to examine the report of the qualification of matriculates to see how sadly the profession is going to be lacking in this respect. I do not draw attention to this by way of contrasting the present with past classes; the standard of the present may be as high or possibly higher than that of any that have preceded them. I merely wish to emphasize the fact that if we are to keep pace with the other professions, we must at least encourage prospective students to acquire a general education before entering upon the study of our specialty.

To produce great men we must have great institutions; to have great institutions we must have great men to conduct them; and educational institutions cannot be great without educated men with which to man them. With a fourth session added to the requirements for graduation, a consequent change in the curriculum, and a necessary addition to the college building, places our school in the forefront of dental educational institutions at the present day.

As I look over the horizon, I see dawning great possibilities for those entering our profession at the present time. The X-rays, the microscope, the fleuroscope, the development of bacteriology, the introduction of electricity, the recognition of the reaction of general to local diseases, and the invention of new instruments and appliances, are doing wonders in the prevention, diagnosis and treatment of dental ills. But I believe our knowledge of these subjects is but in its infancy. The young men who enter upon a scientific study of dentistry, and who carry their study and research into their practices after graduation, have opportunities of becoming famous, and of making ours one of the grandest, because one of the most beneficial, of professions.

Before the next meeting of this society, there will be held in this city the second biennial meeting of the Dominion Dental Association. It is hoped that every member of the society (Ontario Dental) will attend that meeting, as matters of great importance to Canadian dentistry will come up for consideration. Besides, it is highly desirable that the experiment of a society, embracing the profession of the whole Dominion, should be an unqualified success.

Again I welcome you, hoping the present may be as successful in every respect as past conventions have been.

DISCUSSION BY DR. J. B. WILLMOTT.

Dr. J. B. Willmott.—There is just one point that I wish to call attention to, and that is in reference to the combined curriculum question. It is quite true that Queen's, McGill and Toronto Universities are combining the courses of arts and medicine. The young man who has ability can take B.A. and M.D. in six years, but he must take part of his medical course with his arts course. In the proposed medical and dental course, the student is not to take the medical course first, and then the dental course, but to take them concurrently, the whole to be completed in six years. I have been making some enquiries about the combined arts and medical course, and found that a large percentage of the men who started the course dropped out and went into medicine alone. They found it was more than they could manage satisfactorily, and they concluded that, as they could not make both, they would drop the arts course.

If we combine the M.D. and D.D.S. studies, I anticipate that we will have the same trouble, as the medical student has quite enough to occupy his four years. Another point is about indenturing of students, and that is a matter which will have to work out its own solution. One thing is certain, that it seems to be the general idea, that students will have to apply themselves to the study of dentistry in the summer vacation in the office of a licentiate, if for no other reason than to keep us from the expense of prosecuting them for illegal practice. The greatest number of those we have to prosecute now are undergraduates of American colleges, who come over here during the summer months and practise contrary to law.

SOME OF THE USES OF IMPEY'S PLASTIC MAT GOLD.

By A. C. Coldwell, Dundas.

Clinic at Ontario Dental Society 1904.

Plastic mat gold—a form of gold for filling teeth—manufactured by Impey Bros., of San Francisco, possesses qualities which characterize no other gold that has come under the writer's observation.

In general appearance it resembles somewhat the other forms of crystal gold. Under the microscope it presents an appearance of feathery crystals, which are really an arrangement of cubes with their faces in apposition. Its range of application is peculiar to itself, and is one which should make it a useful addition to our list of filling material.

Plastic mat gold works very rapidly, possesses the utmost cohesiveness of pure gold, and, in consequence, will weld or cohere to itself, to gold of any caratage above fourteen, to platinum or to tin. It will weld almost as well under moisture as when dry, and can be made to cohere under oil of cloves, vaseline, or any other liquid that, when allowed to dry, does not leave a residue which would act as a mechanical barrier to cohesion.

It is, however, somewhat exacting in its demands upon the operator, and, to get the best results, care must be exercised in its selection, preparation, and manipulation. It is manufactured in three thicknesses,, namely—Compact, semi-compact and loose fibre, each intended to meet a particular condition most successfully. The compact form is in thin glistening sheets of close texture and fine grain, and is most useful in restoring scaled or broken gold fillings to their original contour, or in commencing the repair of crowns or bridges. The semi-compact variety has the most universal application of the three, and has proved, in the writer's hands, to be the most desirable form for general use where gold is indicated. The loose-fibre is perhaps best adapted for the filling of simple cavities or occlusal or buccal surfaces. It packs readily under large, ball-pointed instruments, but has a tendency to chop up and crumble.

Great care must be taken in annealing plastic mat gold. When heated, the cubes which compose it tend to take on a spheroidal form, reducing the surface of contact, but on cooling the original shape is resumed. Should the heat be maintained for too long a time, or carried to too high a temperature, the surface of mutual contact is permanently lessened, so that the gold has a tendency to crumble, and while it will still weld under mallet force, it is not so easily manipulated. Perhaps, one second at the right temperature would be sufficient, but this can best be determined by the change in color from yellow to brown, which the gold undergoes when sufficiently annealed.

Its Use as a General Filling Material.—Prepare the cavity in the usual way, avoiding pits and undercuts, cut the gold in pieces sufficiently large to cover the gingival or pulpal wall of the cavity; anneal on mica, or in electrical annealer, and carry to position with plyers. Condense the first two or three pieces with a large, ball-pointed, finely-serrated plugger. When a cushion of gold has been formed, go over carefully with a smaller plugger-point until the gold color is brought out, after which the subsequent piece may be condensed by either hand or mallet force.

If the cavity is an approximal one in the incisors, difficulty may be experienced in getting the first two or three pieces inserted without crumbling. This may be overcome by wrapping a napkin on the index finger of the left hand, and holding them in place until condensed, but a better method is to use anterior matrix, described by Dr. Gow in the January number of the DOMINION DENTAL JOURNAL, care being taken to properly fill the gingivo-lingual region.

As a Means of Starting a Filling.—The ease with which this material adapts itself to the walls of a cavity makes it very useful in the starting of fillings, where the use of cohesive or non-cohesive gold foil would be difficult. The gingival third of the cavity may be built up with plastic mat gold, and the remainder of the filling finished with foil.

Restoring Broken-Down Gold Filling.—Wash the filling well with absolute alcohol, and dry with blasts of warm air; with an excavator or bur, scrape off the surface gold until a fresh clean surface is secured. Apply small squares of compact mat, properly annealed, so that the crystalline surface is next the filling. Condense with large plugger points, then with smaller points in the mallet and proceed with either the compact or semi-compact variety until the necessary restoration is complete.

Sometimes during the insertion of a filling through injudicious or excessive malleting, the molecular tension of the gold already in place is raised to such an extent that additional pieces will not cohere. This condition may be corrected by the use of the compact mat. After one or two pieces have been placed in position and condensed, the new surface presented will allow of the filling being proceeded with.

As a Submarine Filling Material.—Occasionally we are called upon to insert gold in cavities where it is difficult to apply the dam, or where access would be difficult with the dam in position. In cases of this kind plastic mat gold often fills a useful purpose. By means of napkins or absorbent rolls, the cavity may be prepared and dried when, owing to the rapid working qualities of this gold, it may often be filled before the moisture breaks through. Should the filling become wet during insertion, the napkins should be immediately removed, allowing the cavity to remain flooded with saliva, and the filling proceeded with in the ordinary way. It will be found that with the application of a little more force in condensing, the gold will cohere almost as well as when dry.

As a Means of Repairing Crowns or Bridges.—When it is necessary to weld the gold to gold of lower caratage, as in the case of correcting imperfections in crowns or bridges, either in or out of the mouth, the baser metal should be scraped at the point where the repair is to be made, until a bright, clean surface is obtained, when the compact variety may be applied as in repairing fillings.

An easy way of testing the strength of the union that takes place between this gold and gold of lower caratage is to scrape the surface of a gold coin which is about 21.6 carat fine, and build a nodule of gold on the flat surface. If the technique has been properly conducted it will be found almost impossible to dislodge the gold nodule.

DENTAL PRACTICE IN QUEBEC.

By C. J. Morison, Montreal.

I am not a historian and I am not a prophet. I realize my incompetence in dealing with things even of the present time, and yet I have undertaken to write a paper on "The Past, Present and Future of the Dental Profession in the Province of Quebec." Some months ago I had the privilege of reading over some of the first volumes of the *Canada Journal of Dental Science,* and it was then that the thought struck me—would it not be of interest and of great benefit to the members of this Club to hear about their forefathers in the profession!

When we think of how our predecessors labored so diligently that the dental profession might be set upon a better footing, and of the difficulties with which they had to contend, it must surely serve as an impetus to us, with all our environments of progression, to strive in an unselfish manner for the dignity, honor and advancement of our chosen profession!

In reading Dr. Osler's address to the members of the Canadian Medical Association last year, which is published in full in the October number of the Dominion Dental Journal—and just here I would like to compliment the editor of the DOMINION DENTAL JOURNAL on his good taste in the selection of such a piece of literature for his readers—I notice that Dr. Osler refers to the noble ancestry and ancient honor of the medical profession.

While the dental profession is to a great extent a young one, yet we also can trace it back to the days of the ancients. Many circumstances might be enumerated to show that dentistry enjoyed a goodly share of the attention of the people of early times.

Belzoni and others discovered manufactured teeth in the sarcophagi of the Egyptians. The Egyptians filled teeth with gold, as proved by the mummies from Thebes. We have historical evidence that the Greeks and Romans paid considerable attention to the diseases of the teeth, and the wearing of artificial teeth was the subject of satire for some of the poets. Herodotus tells us that there was a subdivision of the medical science, and no practitioner was allowed to practise any but his own branch. Thus some were oculists, some were aurists, some attended to the diseases of the head, and others to those of the teeth.

However, these remarks are just by the way, for I will not treat of the progress of dental science down to the present time. I merely want to show that it can lay claim to antiquity, and that it has kept pace with the march of science, and during the last half century or more has probably made greater strides than any other profession.

While we read of the ancients performing operations for the preservation of the teeth, still the greater part of the practice of the pioneers of dentistry was the replacing of lost teeth with artificial ones. The first substitutes for lost dental organs that were used were teeth secured from the human skull. We hear of people going out on the battlefields of history and breaking up the skulls of the dead in order to get the teeth, which were sold to dentists for a shilling a piece. Then ivory and the teeth of the hippopotamus were used. They were filed down to fit the alveolar ridge, and holes were drilled in them. They were then attached by means of melted sulphur to gold plates. About the year 1840 porcelain teeth were first used, and dentists were obliged to make their own teeth, until a few years later, when S. S. White & Ash & Sons began their manufacture.

One of our venerable confreres in this Province, who is living now, tells of the time when he used to go out into the fields and, procuring a suitable stone, would take it to his laboratory, and fuse it and mould it into artificial teeth.

One of the oldest dentists in the Province, Dr. Knowlton, late of Waterloo, has died very recently, and I was informed that he, being of the old school, still had in his possession the old moulds and apparatus for making porcelain teeth for use in his own practice. I have communicated, through Dr. Cleveland, with his son, and he promises to give them to the Montreal Dental Club. I might suggest that a great many old instruments and appurtenances of the dental office of the olden times might be collected together and form the nucleus of a Dental Museum.

Continuous gum work came into use about the year 1850, and was used by only a few of the dentists in Montreal. It was an expensive luxury, as it practically meant that a practitioner had to import a man from the United States, who had learned to do this difficult work.

Gutta-percha was experimented with as a base for dentures about 1855, but it was soon discarded to give place to vulcanite. For filling materials gold was the mainstay, and was used with surprising success in all sorts of cavities. I am speaking now of the time prior to 1840.

About that time amalgam was advocated by some dentists, but the great majority of the authorities were opposed to it, and the great amalgam war of 1844-1845 dealt it a severe blow. It revived again, however, and in 1870, while still a number of practitioners refused to use it at all, the majority inclined to use it wherever they thought it judicious to do so.

Properly speaking, America is the home of dentistry, and, while as I say, it did exist in the olden times, it was born again and took its true life in America.

The first man to really practise dentistry as a distinct profession in this Province, was a man whose name is familiar to us all as it must be to our American confreres. I refer to Dr. Spooner, whose memory is immortalized by his discovery of arsenic as a pulp-devitalizing agent.

Dr. Spooner was an American, who came to Montreal with his brother to practise dentistry about the year 1830. He was one of seven brothers, and they were all dentists, the other five of them practising in different parts of the United States. He was never an ardent lover of his profession, and, after a few years' practice, gradually broke away from it and, as he was a man of some wealth and literary tastes, devoted most of his time to those pursuits. Leaving Montreal he went to one of the eastern States, and took up his residence there. After him in 1840 followed Drs. Paine, Scripture, Elliot, Dickenson and Webster.

I would like here to remark that Dr. Webster was the first man to administer ether or chloroform in the Dominion of Canada, and made a specialty of it. The medical men at that time used to call him in to administer these anesthetics for them when performing surgical operations at the different hospitals. It seems to me that the tables are turned, for do we not now rely too much on the medical men to anesthetize our patients.

Then in the next decade we find the men whose names are familiar to us all, and who were responsible for the Act of Parliament which, while changed somewhat, still governs us, and these men may be called the fathers of the profession in the Province of Quebec—Bernard, Brewster, Bazin, Beers, Trestler, Leblanc.

. In September, 1868, we find that the first attempts at organization were made by the few dentists who were practising in the Province of Quebec. Although their number was small in comparison with the number of practitioners in Ontario, yet they were not far behind them in procuring legislation.

The Ontario dentists secured their Act of Parliament in March, 1868, and we find that steps were taken at a meeting held six months later by the practitioners in our Province to obtain the same.

At this meeting were present the following gentlemen: Bernard, Trestler, Webster, Brewster, Bazin, Leblanc, Bell, Alloway, Valois, Nichol and Beers, McKee, Lefaivre, Dowlin and Brodeur, Ed. Carter, Esq., M.P.P., A. W. Ogilvie, M.P.P., A. A. Stevenson, Esq.

In March, 1869, the Act of Incorporation was secured, and a Board of eleven Examiners was appointed to examine candidates for practice. Dentists who had been in practice for two years preceding the passing of the Act were considered qualified for the license.

I omitted to say that in 1842, Dr. Bernard had made an attempt to procure legislation for dentists at the time of the passing of a Medical Bill, but was unsuccessful.

Advertising was carried on to a considerable extent in the early days of the profession, and some of the leading dentists would prepare dentures of different kinds and exhibit them in show-cases at the different exhibitions in the Dominion. This practice was also carried on in the United States.

In 1871, the Board took the first steps to abolish show-cases and all unprofessional signs and advertisements.

The year 1873 saw two of the leading dentists honored in a signal way, Dr. Bernard being elected Mayor of Montreal, and Dr. Baillargeon being made a Senator.

To show the growth of the profession in regard to numbers, I might say that in 1850 there were about six practitioners. In 1870 there were thirty-six who had succeeded in qualifying for their license. In 1880 there were sixty-nine. In 1890 there were 118. In 1800 there were 217. In 1903 there were 264 names on the Register, but of this number seventy-eight are either deceased or have retired, leaving at the present time 186 practising dentists in the Province.

Prior to 1878 the examinations were only held on theory, but in that year candidates were obliged to subject themselves to a practical examination. The year following anatomy, physiology, and chemistry were required, and the students were obliged to show certificates of having passed in these subjects at the Universities. A year later students were obliged to pass examinations in these subjects before the Board. The events from that time up to the present you are all familiar with, of the establishment of the Dental College, and of its later affiliation with the University of Bishops.

To-day the profession of dentistry stands in a position of which we may justly feel proud.

In the United States there must be in the neighborhood of 200 dental colleges, many of them fitted up in the most expensive and modern way, having on their staffs many eminently scientific men and giving a very thorough course of study. In Canada we have the Royal College of Dental Surgeons, which compares favorably with the best of its sister colleges across the line. Our own college here has been struggling along in the best manner possible, but lack of funds and lack of appreciation on the part of the public has retarded its advancement somewhat.

However, gentlemen, I am permitted to make an announcement to you to-night, which has been indefinitely referred to in a recent issue of the press. At the recent meeting of the Dental Association the Board was authorized to arrange for the possible affiliation of our College with McGill and Laval. Thanks to the untiring efforts of the Committee appointed, composed of Dr. Brown, Dr. Stevenson, and Dr. Dubeau, I am pleased to be able to say that we have been successful, and that after the arrangement of some details, the Association will be called upon to decide whether or not they will become identified with and have their studeits educated at a first-class French University, and one of the greatest English Universities in the world.

Thus do I look into the near future and see existing a Department of Dentistry in McGill and Laval, with an attendance of from 100 to 200 students, coming from all parts of the Dominion and elsewhere, a complete course of instruction in all parts of dentistry and medicine, a first-class infirmary for the training in the practical branches of dentistry, claiming the interest of the public as well as the profession.

Our students having access to the hospitals, where they will get instruction in surgery and anesthesia, I see our graduates going back to their student days and studying dental subjects to keep pace with the advanced education of the times.

I see a body of men who are not only clever operators, but who are intelligent in theoretical subjects, who are always thinking of the best services they can render to their profession as well as to their patients.

I see an increased interest being taken by our graduates in conventions and society meetings, both local and provincial, Dominion and international.

I see them climbing the social ladder as well as the professional one. I see also an educated and appreciative public in regard to our profession, and more people coming more regularly to visit their dentist. They understand the importance and value of having good services rendered, and incidentally the commercial value of the same.

And here, gentlemen, I will bring my paper to a close. I realize now that it has been badly put together; therefore I thank you for your indulgence in listening to it. I only regret that such a subject had not been placed in more worthy hands.

With your permission I will relate an amusing incident that happened in the practice of one of the early dentists in Montreal —Dr. W. H. Elliot. One day a fellow-countryman of his, a Vermonter, came to him with his head rolled up in flannel, and one side of his face swelled out of all shape. The cause of his trouble was evident enough; he had a tooth with a hole in it, and was suffering from a dreadful toothache. The dentist put him in the chair, and soon removed the offending molar. The patient got up, washed his mouth, looked at Dr. Elliot, and looked at the tooth so lately his, but was evidently puzzled about something. At last he said: " Say, Doctor, is that the way you allers do?" "Of course it is, how else could I do?" "Wall, I thort as how you put a blast in and blowed them out." "Blowed them out! why, how could I do that?" "Wall, I dunno, but if you don't put a blast in, what do you keep tooth powder for?"

Dagonet on Dental Caries.—Mr. G. R. Sims, commenting upon the physical deterioration of the English race, says, "We are a decadent people, and if you reckon the 'decay' in English and the 'dent' in French you have come to the secret of it. The teeth of the masses are neglected and go wrong in early life, and their food, such as it is, ceases to nourish them. The white flour theory is a perfectly sound one, but a good deal of the deterioration which is causing us trouble is, of course, due to the water we drink. The qualities of the drinking water of a district are stamped on the inhabitants. If you take up your stand at a big railway station like that of Blackpool on a Saturday morning in the tripping season you can almost tell where each trip comes from by the teeth of the trippers. In some portions of Lancashire you will be able to find a toothless town. I was once so struck by a toothless trip that poured into Blackpool, that I had to make many inquiries. Men and women, lads and lasses, their average was three teeth per head. I was told that in the district these people came from the water was deficient in certain qualities, and that the teeth began to crumble away in childhood."—*British Journal of Dental Science.*

Selections

LIMITATION OF EXTENSION FOR PREVENTION.

By G. V. Black, M.D., D.D.S., SC.D., LL.D., Chicago, Illinois.

Professor of Operative Dentistry, Pathology and Bacteriology, Northwestern University Dental School, Chicago, Ill.

The forms of the areas of liability to decay are different in the molars and bicuspids from the forms presented in the incisors and cuspids, because of the differences in the forms of proximal surfaces of these teeth, but the essential character of the areas are the same in all, so that they are really much alike. The area of liability to decay upon the proximal surfaces of all of the teeth is to the gingival of the contact point. In the bicuspids and molars its occlusal border line passes through, or just gingival of, the contact point horizontally and reaches slightly out into the buccal and lingual embrasures. It then rounds to the gingival. The buccal border line passes diagonally to the buccal and gingival to the free border of the gum, and the lingual border line passes diagonally to the lingual and gingival to the free border of the gum. The gingival border line follows the free border of the gum from buccal to lingual, inclosing the area. In the incisors and cuspids the form of the area of liability is different, because of the triangular form of their proximal surfaces. Toward the incisal it forms a somewhat rounded angle at the contact point and stretches away to the buccal and lingual and gingival along the opening of the embrasures to the free border of the gum, and is bounded to the gingival by the position of the free border of the gum, enclosing a triangular space. This area enclosed by these lines is the proximal area of liability to decay. The area of tooth surface just outside of these boundary lines, or along the angles of the teeth, is immune to decay in all persons who are making free use of their teeth in mastication. We rarely see decay beginning upon the mesio-buccal or disto-buccal angles of the teeth, and it almost never occurs upon the corresponding lingual angles. The reason is that in the mastication of food it is forced through the embrasures in such a manner as to sweep these angles clean. It is for this reason that they are immune. When I speak of immune areas of the surfaces of teeth it must be understood that the immunity meant is due to position entirely. The tissue of the tooth upon these areas would be just as liable to attack as that of the areas of liability if their relative positions were changed.

Stated in shorter terms: The proximal area of liability to decay is bounded to the occlusal by the proximal contact point, to the buccal or labial and lingual by the opening of the embrasures to the excursions of food during mastication, and to the gingival by the position of the margin of the healthy gum septum.

This requires that the operator make a study of each individual proximal surface involved in decay, determine the boundaries of its area of liability to decay, and that in the preparation of the cavity the whole of the area of liability be included within the cavity outline, together with such area of the occlusal surface in bicuspids and molars as may be necessary to give convenience in operating and stability to the filling. If present decay only be removed, the cavity lines not being extended as described, decay will recur about the margins of the filling, causing failure. The provisions for maintaining the health of the gum septum should not be overlooked. Caries never makes a beginning on a portion of the tooth surface covered by a healthy gum septum or gum margin. All such portions are strictly immune. A margin of a filling so laid that it will be continuously protected by healthy gum tissue is as safe as if laid upon a surface fully exposed to the friction of mastication. Therefore the preservation of the health of the septum of the gum which normally fills the interproximal space to the contact point is one of the important factors in treatment. It follows, therefore, logically, that in the preparation of these cavities, they must, in order to be curative, be cut so far into the embrasures both to the buccal and to the lingual that the excursions of food in the act of mastication will sweep their marginal lines and keep them constantly cleaned, and the gingival margin must be so laid that it will be covered by the gum septum. Then if the form of the proximal surface, and especially of the contact point, is so made that it will protect this gum septum, and sufficiently prominent to reserve the full mesio-distal breadth of the tooth, the permanence of the filling made with technical skill is assured. The cutting of cavities to these lines is termed extension for prevention. It applies to all proximal cavities.

STUDY CONDITIONS CAREFULLY.

For development in the highest skill in carrying out these procedures the conditions should be carefully studied from mouth to mouth in these cases presented in practice. In persons belonging to highly susceptible families and who present a number of beginning decays, close examination will show, when the surfaces are cleaned and dried, whitened areas of enamel leading away from the central area of penetration to the buccal (or labial) and to the lingual close to the margin of the gum. This is really incipient decay and it should be carefully noted, and the form of the area studied with reference to the proximating teeth and to the marginal edge of the gum tissue. The directions taken by food in its excursions over the neighboring parts during mastication and its effects in cleaning the parts should receive especial attention. By this kind of study carried on from mouth to mouth the operator will learn to appreciate the areas of the surfaces of the teeth liable to decay and become able to lay the margins of cavities on lines of comparative immunity without cutting excessively.

By this plan of study it is found that the areas of liability of proximal surfaces broaden out to the buccal, or labial, and to the lingual along the line of the free margin of the gum or near it. Therefore, by extending the cavity so as to include these points within its marginal lines, squaring out the labio-gingival angle and the linguo-gingival angle in incisors and cuspids; and in bicuspids and molars in addition to squaring out the buccal and linguo-gingival angles cutting the buccal and lingual walls parallel from the occlusal surface until the gum margin is reached, and the gingival margin straight from buccal to lingual, these areas of liability to the recurrence of decay will be included in the cavity. At the same time the form of the cavity will be greatly improved in the physical sense so that the filling is more quickly and easily made, facilitating accuracy in the operative procedure.

Studies of this nature will, after some time, enable the operator to form a better estimate of the necessity for extension in particular cases. As the general rule it will be found that as persons grow older, and the intensity of susceptibility has diminished, and especially in those in whom the tendency to caries has never been great, the areas of liability are comparatively smaller. In these the extension required will be correspondingly less.

These processes are carried out for their curative and prophylactic value. Much simpler fillings, in the technical sense, may be made, and have been made, in these cavities in the past, but have been found lacking in prophylactic value. Decay is continually recurring about the margins of the fillings, whenever these are involved in habitual uncleanliness, and they are soon undermined and destroyed. Extension for prevention intelligently adapted to the conditions and skilfully carried out has been found an effective remedy.

EXTENSION LIMITED.

In the use of extension for prevention, there is no call for extension around the angles of the teeth on to either buccal, labial or lingual surfaces. Objection has been made in some journal articles and society discussions that cavities had to be cut inordinately large in order to comply with the requirements, especially in the front teeth. This is from a misunderstanding of what is meant. In the front teeth there should be no cutting over on to the labial surface, nor should there be any considerable show of gold fillings for the purpose of satisfying the rules of extension for prevention. Decay seldom begins on the angles of any of the teeth, and especially is this rare in the angles of the incisors and cuspids. When cavities in these are so cut that the margins approach the angles sufficiently to free them well from near contact with the proximating tooth, extension for prevention is satisfied, as a general rule. An incisor should never be cut on to the labial for the purpose of extension for prevention in the preparation of a cavity. It is only when decay has extended so as to undermine and practically destroy a portion of the enamel of the labial surface that it should be cut away. In these teeth the necessities for extension for prevention relate almost exclusively to broadening the cavity to the labia-gingival and linguo-gingival or squaring out the ordinary rounded form of the gingival wall and making the labial and lingual walls straight from near the incisal angle to the labio-gingival and linguo-gingival angles. This was distinctly pointed out and illustrated in my articles of 1891, in the *Dental Cosmos*. The same rules apply to bicuspids and molars, with this difference: Incisor cavities must be filled from the labial or lingual because they are not cut out to the incisal; proximal cavities in bicuspids and molars are cut out to the occlusal and must be filled in from the occlusal. Therefore, for convenience in operating, and in order that the filling can with certainty be well made, it is necessary that the cavity be as broad bucco-lingually at the occlusal as at the gingival. Therefore, any extension made at the gingival toward the buccal or lingual must be carried out to the occlusal. This makes cavities somewhat larger in these surfaces. But in no case is it necessary to extend to the angle of the tooth, much less beyond the angle, in satisfying the demands of extension for prevention. Large fillings extending far out on to buccal or labial surfaces should be made only when demanded by extension of decay.—*Dental Summary*.

THE RED CROSS IN DENTISTRY.

By H. M. Semans, A.M., D.D.S., Columbus, Ohio.

Professor of Dental Antomy and Operative Technics, Dental College, Ohio Medical University.

I try to impress my students with the fact that the keystone to successful dentistry is manipulative skill.

To be clean, mentally and morally, and equipped with the training obtained in a general dental knowledge at college and in office, these two, like corresponding sides of an arch made strong and firm with the keystone "manipulative skill," will ensure an honorable, successful life. If the arch is defective on the right side, or the left side, or at the top, the usefulness and beauty of the whole structure is marred. If we remain deficient in any one of the three above attributes our dental structure remains weak, our course through life is haphazard; sooner or later we fall, the weeds grow over us and we are soon forgotten. If we exact improvement in ourselves, we have twenty years in building, followed by twenty years in the enjoyment of a successful professional life made possible by close observance to the two sides and the keystone of the arch.

A clean life; we can all start with that. A general dental knowledge; that we may easily have, and the seeking after it should be one of the enjoyments of our life. But skilfulness in manipulation we are apt to allow to look after itself. We know we must be cleanly in habits or else our patients leave us; we know we must have knowledge of our profession or else patients are not forthcoming. Thusly equipped we start out in life. Our successes we tell to the world; our failures, to the world we grant none, to ourselves we are apt to curse our ill-luck and bat ahead. An old philosopher once said: "Show me the man who made failures the first half of his life, but each failure was but a spur to something better, and I will show you the man whose latter half of life was crowned with honor."

A dental symposium in which the failures alone would be presented might at first thought seem like the old time-dishonored bone-yard. But did you ever notice the beautiful yellow, ripe fields ready for the harvest? It was bone-dust that did it. We fear and dread the knowledge of others of our failures, then let's each one of us form our own little symposium. Why not do this? After each piece of work is finished, place in the remark column wherein improvement might be made. If our patient was handled in the most comfortable way possible, and if our work allowed of no criticism whatsoever, then place a red cross in that same column. There are endless little ways and means we will find we are picking up here and there; in our magazines, in our societies, in our daily contact with others, yes, and in our own striving to do better next time. If we are truthful to ourselves the red cross will be seen just enough to be an incentive to see more of it. If, however, we place the red cross after every case, then catch up the harp, unfold the wings and fly away to heaven. Either we will crash to earth in our conceit, or else the pearly gates will open, heaven's retinue will receive us and upon our brow will be placed the still unused diadem with this inscription: "Though but mortal, perfection was achieved."—*Dental Summary.*

THE TREATMENT OF PYORRHEA ALVEOLARIS (SO-CALLED) WITH THE X-RAYS.

By Weston A. Price, D.D.S., M.E., Cleveland, Ohio.

Read before the Cleveland Dental Society, January, 1904.

At the request of your programme committee I will present to this society the results of my experiments in the treatment of this common, but stubborn disease with the Roentgen rays. In preparing the report, I have tried to err on the conservative side, and will prefer to let others who have seen the cases before and during and after the treatment, some of whom are here, report in as much detail as they will. For obvious reasons I have avoided a discussion of the etiology and differentiation. In 1900 I made a series of studies with sciagraphs of the alveolar structure of a few typical cases of so-called pyorrhea alveolaris, noting the diminution of the lime salts by the less density or absence of the bony tissues, and was especially interested in one particular case which was very aggravated. The flow of pus was profuse and the discomfort quite severe and continuous. The teeth, the lower left molars, were quite loose. I made several X-ray pictures of the case when inserting some fillings in the anterior teeth. The patient was urged to have the pockets and teeth thoroughly cleansed and treated, and an appointment was made for the purpose, but he broke the engagement and was disinclined to make another, stating that the teeth were not worth the time. Some months later he came to the office and stated that for some reason his teeth were very much better, and on close examination I found that the tissues had lost much of their previous appearance, and the presence of pus which before had been so profuse, was only slightly discernible. The whole condition was very greatly improved. I saw the case frequently for the next year, and although the condition was quite distressing on the other side, this side remained quite free from either discomfort or pus. This case had about five or six exposures. I thought the X-rays might have had something to do with the results, but feared it only a coincidence; however, I determined to make a test case as soon as I would have a typical and extreme case.

ANOTHER TEST CASE.

I finally found such a case where the patient, Mr. H., age about fifty, was willing to be experimented upon. He had been troubled a great deal for the preceding five or six years, during which time the right upper lateral had loosened and been lost, and the cuspid adjoining was very sore and somewhat loose, and with a very profuse flow of pus. He said there had not been a time for years when he would not press a quantity of pus from the cavity, as much as a drop every time he would put his finger over that tooth. The centrals were quite badly affected as was also the right cuspid just below. About ten to twenty minutes was spent in removing readily removable deposit and debris from all these teeth, and an opaque mask was put over his face, being careful always to cover the lower cuspid and expose the upper cuspid root area. The test was to try exposing the worst tooth to the X-rays and protect the rest, very particularly the lower cuspid. The patient's business, and probably more than a little his lack of hope for any beneficial effect, made it very difficult to get sittings regularly, but a number of treatments were carefully made from one to two weeks apart, and whether incidentally or not the presence of pus rapidly disappeared from the upper cuspid under treatment, while there was no change for the better around the lower cuspid. The congested and bluish angry gum with its gapping pockt around the tooth being treated gradually and quite rapidly changed to a pinkish white and the thickening reduced to about a normal gingival margin. A very marked change in the condition was that the gapping pocket constricted until the tissue hugged the root quite closely, so that it took perceptible pressure to pass a scaler between the tooth and gums into the pocket. There was a very marked change in the response of the tissues. Before the treatments the tooth was very tender to brush, and the gums painful. It caused much pain to put an instrument into the sensitive pocket and after the series of treatments this sensitiveness disappeared. The patient described the change as being, that before treatment the tooth felt like a foreign substance and an irritant, and afterward felt like his own tooth. This upper cuspid area had no treatment that the lower did not have *except the exposure to the X-rays*. It is now seven months since the last treatement, and there is no recurrence of pus or any of the typical symptoms, and the lower cuspid still has its flow of pus on pressure and also much tenderness and has continually grown worse. The upper centrals were generally partially or wholly exposed during the treatments, and while the condition was not aggravated around them to start with, they too were very materially improved. I have had some others watch the results of these cases with me in order that a more correct judgment might be secured, among them our president, Dr. McDill and Dr. Yahres, whose criticisms and opinion we desire to hear. In this case the alveolar pocket seems to have been restored, for where an instrument could be passed deep into the pocket at least half an inch on the mesial side of the root, it is impossible to pass anything in now. The pocket is completely closed as you will see by inspection of this patient who has kindly consented to come.

VERY DIFFICULT CASE.

Encouraged by this result, but feeling that it might all be due to some other unobserved cause, I tried some very difficult unpromising cases. Mrs. G., age about sixty, stout and rheumatic, knew of the encouraging results of the last case, and begged to have the treatment applied to her teeth. The upper cuspids, particularly the right, were very bad, but her lower centrals and cuspids were worse, indeed very bad. The loose lower incisors had been supported by a splint attached to the laterals, and the gums about them all were very much inflamed and swollen, and I think the most sensitive tissue I have ever tried to work around. I tried to remove the debris around the roots, but could not go into the pockets. After a few treatments I could work around the cuspids and laterals, but the centrals were still very sensitive. From the first the hemorrhage had been profuse, and a dark blue indicating a very stagnant circulation. I took a skiagraph of the teeth, and found the attachment gone almost entirely, even to the apices of the centrals and decided that the splint was about all that kept them from dropping out, and accordingly removed their attachments to it, and easily took them away and replaced them with artificial ones attached to the same splint. The treatments were continued once or twice a week until in all about ten or twelve treatments were given, always protecting the very bad upper right cuspid from the rays in order that a good test might be made. The pain was so much relieved after the treatments that the patient entreated me to make very frequent exposures to the rays. My fear and dread of burning the patient, or of over treating, because of the difficulty of protecting her with the inconvenient apparatus I had to use to make the application, restrained me from very frequent treatments until I could perfect something better, which I seemed to be unable to find time to do. It is very significant that, though the lady had to come a long distance, and was not able to get on and off the cars without considerable difficulty and danger, she would call up between appointments for permission to come, giving as her reason that her gums felt so much better for a day or two after treatments. The results were that the soreness and swelling and redness and particularly the presence of pus were entirely removed from all the lower teeth exposed. The gums took a very normal shape and light pink color, constricting about the teeth, and a very significant condition is that while hemorrhage is produced with some difficulty, it is red blood instead of a dark blue, showing a very marked improvement in the functional activity of the tissues.

The upper cuspid which was protected from the X-rays but had the same amount of cleaning and scaling, in fact more, showed no improvement whatever. This was the condiiton when I left in June for my vacation, and if anything, her lower teeth have improved since that time. It is a strange coincidence that this upper cuspid which had exactly the same treatment as her other teeth, except that it was protected from the X-rays, should have fared just like the teeth protected from the X-rays of the last cited case.

On my return from my vacation this elderly patient was on hand to have this upper cuspid treated. The flow of the pus on pressure was very profuse, and the tooth very sensitive to concussion. The inflamed gum bled on the slightest irritation, the hemorrhage being very dark. No treatment was given except the removal of the easily accessible debris and deposit, and the exposure to the X-rays, and in six weeks not only was the presence of pus entirely gone but the gums had become quite normal in shape and color and the tooth become quite rigid. She left the city for a visit at that time.

She has lost in the last ten or fifteen years about one-third of her teeth, notwithstanding that she gave them thorough care and treatment.

ANOTHER SEVERE CASE.

The next case I will report was Miss F., age about twenty-eight or thirty, who is under treatment at present. The condition was one of very unusually acute pain, and sensitiveness. The pockets were very deep, the first upper right molar was as sore and painful as if abscessed at the apex of its roots, and in fact we thought it was until I took a skiagraph of it finding that there was no trouble at the apices of the roots, but found that the alveolar process was gone in some places to the last third of the root. The left lateral was elongated about an eighth of an inch or more, and very loose, and was so painful to touch that she could not for a long time even bite into bread with it. This tooth had a liberal flow of pus and the hemorrhage was very profuse, but very dark in color. Very little debris or deposit could be removed from it owing to the extreme painfulness, and I desired to avoid using sedatives or medicaments of any kind in all these tests to avoid sources of error in conclusions. This tooth was considered hopeless when we started, and was only treated for an observation of the change of symptoms, if any, under X-ray treatment. By the third or fourth treatment of all her teeth, with an inefficient and an unsatisfactory method of making the application, the tenderness of all the sore teeth had gone, and a very marked diminution if not entire absence of the pus, and by the tenth treatment the color and contour of the gums was almost normal. A most significant change was that the access into the pockets became much more difficult, the gum tissue was constricted around the teeth in a most surprising and gratifying manner. No means was used to make rigid the loose lateral which seemed loose enough to be picked out easily with the fingers. As the patient expressed it voluntarily, "That tooth has lost all its painful tenderness, why it felt just like something that did not belong there, but now it feels just like my own tooth; why I bite into apples or anything and never think of it now." This skiagraph made when the treatment was begun shows the depth of the pocket all around the tooth, and certainly the tooth should properly have been supported for any kind of treatment, but was not in this case to add to the difficulty, and to exclude all other treatments for just eight weeks, having had just sixteen short treatments, and for some time has felt no discomfort, she says, from any of the teeth, and all of them are very much improved. They are not cured yet, but very greatly improved.

OTHER CASES.

I have treated less faithfully several other cases and because the experiments were not so carefully carried out and for lack of time, will not report them in detail, but in the general this statement, that in no case could I discern any deleterious or undesirable effects, and in no case that could be said to have been treated at all faithfully was there the absence of some more or less marked improvement in the conditions. In some cases where only one or two treatments were made I could not discern any changes. A couple of cases that got only a couple of treatments seemed to improve at first, and then go back after the treatments were discontinued.

It is too soon to judge whether the improvement in those cases that were apparently greatly helped will be more than temporary. However, the first patient has lately passed through a very severe illness without a recurrence about the teeth treated.

I shall demonstrate my method of making the treatment. When I first started this experimenting I did not cover the patient and treated the gums through the lips and cheeks. Later in order to protect the patient, I devised an opaque cloth and cut a hole in a blanket of it, and with it covered the patient's head and shoulders, with the hole over the patient's mouth, or part of the mouth. Later I made a tube shield with a mouthpiece which cut off all the rays from the tube except what would go through the cone and mouthpiece. At first I used a very large volume of rays at a distance of twelve or fifteen inches, then a smaller volume closer, and now I use a very small special tube right against the tissues, with a relatively smaller volume to allow for the difference in the distance, for the concentration of the rays is inversely in proportion to the square of the distance from the course of the rays. These different tubes show the attachments and methods of applying.

SPECIAL TUBE.

I have devised a special tube which I expect will very greatly simplify and add to the convenience of making these applications. It reduces the inconvenience of the application very considerably and allows of treating the teeth from the inside as well as from the outside, which has been the only way heretofore and also protects all parts not desired to be exposed. Since the distance between the source of the rays and the tissues has been reduced in this tube from ten to fifteen inches to one-half inch, the time is reduced not in proportion to the difference in the distance but to the square of the difference, and hence if the same volume of X-rays were used, if it took five minutes for a proper exposure at ten and a half inches from the tissues to the anticathode it would take 5x1-10x10 or one hundredth of five minutes or three seconds at one-half inch distance, which distance I can use with this special tube. Notice I said if the same volume of X-rays were used, but we do not and cannot use nearly so large a volume in this tube, probably about one-tenth as great, so we must regulate the time accordingly, say thirty seconds.

CLEANLINESS.

I believe thorough, very thorough if possible, cleanliness of the pockets should be secured for any possible kind of treatment of this disease, and suitable washes and sterilizing solutions should be used liberally. Please note that purposely this was not done with any of these cases to excluded errors in conclusions. Since we can with this new form of tube treat the gums from both the inside and outside and at close range we do not require so high a penetration, and accordingly do not require a large coil. On account of these conditions prevailing I believe an outfit for this work can be produced at relatively a small cost as compared with a powerful X-ray outfit. Probably seventy-five dollars or possibly less. There are very necessary precautions for protecting the patient's lips and hands from the effects of the rays which are to always have all tissues not necessary to be exposed, protected or shielded by some substance that is opaque to the X-rays. My new tube is provided with this. I have devised an opaque rubber cloth that is very satisfactory for protection, being both very flexible and very opaque. All tissues, whether the patient's or the operator's, become more and more easily influenced by the X-rays under continued exposure, the effect being accumulative. This should be borne in mind.

Some of these patients were examined at my office this afternoon by some of the members of the society, and one patient has given you the privilege of seeing him here. I will be glad to try to arrange an opportunity for any of you who have not had an opportunity to see these cases, to do so where you can study them carefully.

It is very significant that in every case the teeth exposed to the X-rays were so markedly improved, while at the same time those not exposed to the X-rays but otherwise treated, the same either got worse or did not improve.

OBSERVATIONS OF DR. J. M. YAHRES.

Through the kindness of Dr. Price it was my good fortune to see the cases referred to in the paper before the Cleveland Dental Society on the "Treat-ment of Pyorrhea Alveolaris with the X-rays." In the first case, that of Mr. H., I saw it after the second treatment, about a year ago. The tooth under treatment, an upper cuspid, right side, had about it very angry looking gum tissue of bluish red color, a constant accumulation of pus and very deep pockets. Mr. H. told me he could by pressure remove pus from pocket many times during the day. The lower cuspid on same side was also in a bad condition, but was shielded from action of X-rays, so that he might the more positively ascertain the results of X-ray treatment on the upper tooth. To-day I saw the case again, the gum tissue had lost its angry look and looked almost normal, the flow of pus had ceased and pocket had decreased from five-eighths to about one-eighth of an inch in depth. When we consider the fact that the last treatment to this tooth had been given seven months ago; that no medicaments had been used, and that the lower cuspid which had been shielded from action of X-rays was in the same condition as before, we cannot but say there has been a great change wrought through an action of the X-rays. The second case, that of Mrs. C., I saw but once, I therefore cannot say much other than repeat what she said regarding the treatments at that time. She seemed to be delighted with the effect of the treatment and results, and said the only trouble was that the doctor could give her appointment often enough to suit her.

The third case, that of Miss F., I saw but twice. The first time about three months ago, just before receiving the third treatment. I found pus, deep pockets, elongation of tooth and extreme soreness, so sore that patient could not allow anything to touch it when eating. I saw the case to-day, and found pus had ceased, and patient said all soreness had disappeared and tooth felt as if it belonged to her. As the doctor says in his paper, he does not claim these cases are cured, and we all know that a year is too soon to judge on the result of treatment of this condition. Yet we all must admit that there certainly was a great change wrought in the case of Mr. H., and as X-ray was the only means used, it must get the credit. We believe Dr. Price has opened a new channel for the relief of the suffering, and trust it may lead to a cure of this our worst enemy, who greets us so often, and yet of whom we know so little.

OBSERVATIONS BY DR. J. W. M'DILL.

My location in the city and the kindness of Dr. Price has given me the pleasure of watching these very interesting cases. The paper is to a degree a scientific one, and yet it can hardly be classed as a scientific paper, as easily as it can be a practical one. In the face of so many failures incident to the introduction of many new ideas and theories one comforting thing crops out in the paper almost as a preface.

The essayist modestly lays no claim to cures, in fact he cites no cases as cured, simply cases benefited, case seemingly cured either directly or indirectly from the application of the Roentgen rays.

About twelve months ago in the case of Mr. H., the upper right cuspid presented a typical case of pyorrhea alveolaris. The tooth seemed very loose, extremely sore, especially so when molected. The tissues around the tooth were highly inflamed, quite badly receded and had lost their attachment, in fact so much so that an instrument could be inserted along the root for more than half an inch. This operation caused a profuse hemorrhage. Pressure upon the parts adjacent would always bring a flow of pus. The right lower cuspid presented almost the same appearance. Without removing much of the debris or calculus from the upper cuspid the X-ray was applied. During this procedure the lower cuspid was protected with a special opaque cloth which prevented action of any kind upon it. After a lapse of twelve months this upper cuspid tooth seems to be in a normal condition. Inflammation having disappeared, the tooth seemed tight in the process, the tissues seemed perfectly attached about the gingival margin, precluding an instrument at all places. The pus had entirely disappeared, and what blood did flow was of a healthy red color, while before it was of a bluish tinge. The lower cuspid, which had been protected from the X-rays, was in even worse condition than eight months ago.

The case of Miss F. was very similar to the former. The tooth in question being a left upper lateral incisor, very loose, a large quantity of pus about the root, tissues highly inflamed and elongated one-sixteenth of an inch. An instrument could be inserted almost to the apex of the root and the sensitiveness interfered very materially with mastication. Biting into an apple, as Miss F. said, caused " excruciating pain." As before, without removing much of the debris or calculus, the tooth and tissues adjacent were exposed to the rays.

The treatment thus far has been very gratifying indeed as the tooth now seems tight, the tissues are in their normal condition, the hemorrhage is of a healthy nature, the soreness has disappeared, an instrument is inserted with difficulty above the gingival margin, and while the tooth is still elongated, much can be done toward placing it in its normal position by the use of some appliance. I trust these may develop into permanent cures instead of only giving temporary relief, and thus aid us in coping with a very troublesome, obstinate and discouraging condition we so often find.—*Items of Interest.*

REPAIRING FRACTURED TEETH.

By Dr. C. Edmund Kells, Jr., New Orleans, La.

In "The Principles and Practice of Crowning Teeth," recently published by Dr. H. J. Goslee, I note that his treatment of these cases is so unlike the method devised and used successfully by myself that I am led to offer it for the consideration of those who are interested in the subject.

My early cases happened to be men and the teeth (molars) apparently too good to be cut off and crowned, and in these cases narrow gold bands were fitted to the crowns and cemented in place, thus preserving them for many years in some instances. This method, however, I do not believe was original with me.

But several years ago a gentleman presented with a bicuspid split in two, and the crown was comparatively good. A gold band around it as just described would have been too conspicuous; a gold crown was not considered, as the making of crowns of that character had been abandoned some years previously, and a porcelain crown was practically a physical impossibility. I was in a quandary.

It then occurred to me to bolt the two pieces together, as any mechanic would do were he confronted with a like proposition in his own line, and I proceeded as follows:

A piece of irido-platinum wire of suitable length and diameter was threaded with the tap furnished with the Bryant bridge repair set, and upon one end was soldered one of the Bryant cone-shaped nuts.

The two parts having been previously brought together with brass ligature wire, as shown by Dr. Goslee, a hole was drilled through the tooth from the buccal aspect, and of such a size as would allow the threaded wire to just slip through. The openings upon both buccal and lingual surfaces were then countersunk, so as to allow of the nuts being sunk into the tooth.

The bolt was now passed through the tooth, a second nut (also reduced to proper size) was put on the other end and the two parts brought firmly together, the tooth having been previously dried and the bolt and nuts coated with chloro-percha.

When the nuts were polished down to conform to the surface of the teeth, they appeared to be small fillings, and the buccal one, the only one visible, was quite inconspicuous.

This tooth was seen some eighteen months after this work was done and then appeared as solid as before being fractured. Since then a lady presented with the first upper molar in same condition and it was treated in same manner, and at last accounts the bolts had proven a success.

It is therefore evident that the principle employed, which is rational in theory, is equally as sound in practice, and I do not believe the esthetic results obtained could have been equalled by any other method of procedure.—*Items of Interest.*

LAVAL WILL TEACH DENTISTRY.

The Council of Laval University at Quebec has definitely decided that dentistry will be taught in French in the Montreal branch, and the Vice-Rector, Mgr. Archambault, has received the official notice to that effect. The new school will be named "Laval University School of Dental Surgery."

The Board of Governors and Administrators of Laval University, of Montreal, have allotted to the school, in their premises, on St. Denis Street, the necessary space for laboratories, lecturers and professors' rooms. The lectures at the new school will begin next October. The curriculum will extend over four years, and the successful candidates in the final examination will receive the degree of "Doctor of Dental Surgery." The Dental Association of the Province of Quebec will stand towards the school in the same position as does the College of Physicians of this province towards medical schools, viz., they will send assessors to be present at the examination of those under matriculation, and upon the favorable report from the assessors the Association will deliver a diploma of "Licentiate in Dental Surgery," allowing the bearer to practise in this Province. McGill University, having decided to give dental education to English-speaking students, the Association will act the same towards their candidates.

The Dental College of the Province of Quebec will be abolished at the end of this session, and dental education will be left in the hands of McGill and Laval schools. The title of professors appointed at Laval School are: Dr. Eudore Dubeau, Dean and Director of the school; Dr. Joseph Nolin, Vice-President and Registrar; Dr. J. G. A. Gendreau, Secretary and Treasurer. Other professors and lecturers will be appointed later on.

The establishment of this school is due greatly to the work done by Dr. E. Dubeau, the new dean, who, for several years, has devoted a lot of his time to the improvement of dental education in this Province. Dr. Dubeau is associate editor of the DOMINION DENTAL JOURNAL, and editor of *La Revue Medicale du Canada.* He is secretary of the Board of Examiners of the Dental Association, P.Q., since 1898, and represented the Association at the International Dental Congress, held at Paris in 1900. He is also vice-president of the Dominion Dental Association.—*Montreal Star,* Tuesday, March 1st, 1904.

INTERCHANGE OF MEDICAL LICENSES.

Our medical brethren have grasped this fact of the possibility of securing reciprocity among groups of States having similar standards and have energetically utilized it to an extent which has practically accomplished interchange of medical licenses among a large number of States.

The Wayne County Medical Society, of Michigan, in 1899, appointed a committee to further uniform medical legislation. Correspondence was opened up with various State Medical Boards and the conferences and agitation of the question thus created resulted finally in a meeting of the Examining Boards of Indiana, Ohio, Iowa, Kansas, Michigan and Wisconsin in Chicago, April 23rd, 1903, at which the following agreement was ultimately reached as a basis of reciprocal medical registration:

" For the purpose of establishing medical reciprocity among the States composing it, the American Confederation of Reciprocating Examining and Licensing Medical Boards do hereby agree to the following propositions as a basis of reciprocal medical registration:

" (*a*) That as a prerequisite to reciprocal registration, the applicant therefor shall file in the office of the Board of the State of which he is a licentiate such evidence as will enable the said Board to certify that he is of good moral and professional character. Such certificates shall be filed with his application for reciprocal registration in another State.

Qualification I.

" (*b*) That a certificate of registration showing that an examination has been made by the proper Board of any State, on which an average grade of not less than 75 per cent. was awarded, the holder thereof having been at the time of said examination the legal possessor of a diploma from a medical college in good standing in the State where reciprocal registration is sought, may be accepted in lieu of examination, as evidence of qualification. Provided, that in case the scope of the said examination was less than that prescribed by the State in which registration is sought, the applicant may be required to submit to a supplemental examination by the Board thereof, in such subjects as have not been passed.

QUALIFICATION 2.

"(*c*) That a certificate of registration or license issued by the proper Board of any State may be accepted as evidence of qualification for reciprocal registration in any other State. Provided that the holder thereof was, at the time of such registration, the legal possessor of a diploma issued by a medical college in good standing in the State in which reciprocal registration is sought, and that the date thereof was prior to the legal requirement of the examination test in such State."

It will be noted that provision is made in the articles just read not only for the recent practitioner who has been licensed by a State Board upon examination, but also for reputable practitioners who were legally qualified at a period previous to the establishment of the State Board examination as a test of qualification. This is eminently just, for unless such provision were made it would exclude from the benefits of reciprocity a large class of men possibly eminent in professional standing and well qualified for dental practice, yet to whom the preparation necessary for passing a rigid and modern State Board examination would be at least a hardship if not prohibitory.

The foregoing plan is one which is worthy of our careful consideration. It necessitates in each State law a reciprocity clause giving to the Board of Examiners discretionary power in the interchange of licenses; but in many of our dental laws the reciprocity clause is already incorporated, or what is equally efficient in this connection, the Board is given discretionary power to license those candidates of whose qualifications they are satisfied.

The National Association of Dental Examiners is an organization competent to practically deal with the question authoritatively and the precedent which has been already established by the American Confederation of Reciprocating, Examining and Licensing Medical Boards is one which should be most helpful in bringing about the same result in our profession.

Two important advantages in the promotion of general reciprocity attach to the Michigan plan of beginning the work among States of similar standard. First the moral effect of reciprocal recognition when practically established among a group of States in stimulating a general reciprocity movement among all of the States. Secondly, the impetus which it would give to improvement in State standards and as a necessary consequence to dental education in general. It would be an effective check upon any tendency to lower the standard and at the same time a stimulus to any group of low standard States to raise their standards to that of the high standard group.

Many good things tending toward the general advancement of dentistry have had their origin in the profession of New Jersey and why should not her State Society initiate a movement in harmony with the precedent established by the medical profession of Michigan which would eventually make it possible for a qualified practitioner of any State to practise dentistry wherever circumstances might place him throughout the Union?—*Items of Interest.*

THE DRUG ASPECT OF LESIONS OF THE GUMS.

By A. W. Harlan, A.M., M.D., D.D.S., Chicago, Illinois.

Read before the New Jersey State Dental Society, Asbury Park, July, 1903.

I have felt a great reluctance in coming before you with such a subject—not that too much has been written about it, but because what has been written falls too far short of the mark, to comprehend the intelligent and logical application of drugs to, and in the gums, and the administration of drugs internally, that will have an effect on the gum tissue and adjacent mucous surfaces. When we look at the gums as they surround the teeth and cover their bony sockets, we are led to think that the picture presented will always last; that the crescentic margins will never shrink, waste away nor become the seat of disease. So soon, however, as the loss of a tooth, the lodgment of a piece of wooden toothpick between the teeth, the passage of a file or disc between them, or the application of a clamp, separator, wedge or any other tool that will injure the gingival margin has begun the initial destruction we are confronted with a lesion that if neglected may become irreparable. Let the possessor of perfect gums neglect to clean the teeth for a few days or weeks, and there will be destruction of the gingival margin. Let him suffer from some malady that will confine him to his bed for a few weeks or months, and the gums will show the effects of such illness.

I need not dwell upon the many known causes of the beginning of destruction of the gums, for most of them are known to you. An abscess, a badly fitting clasp or plate attached to the teeth, the bands and bars of regulating appliances or ligatures, all have their effect upon the gums, and many of them leave their mark there for you or me to remedy as best we can.

Specific diseases and bad nutrition are chargeable with some defects of gum tissues. Tobacco and salivary deposits make their impress on the gums, and mouth breathing has a large part in distorting the teeth and disarranging them in their sockets. Any affection of the mucous membrane of the nose, mouth or pharynx that is more than transitory, will affect the gums. Lack of personal care and cleanliness of the teeth is responsible for many of the defects of gum tissue, and the injudicious use of toothpicks and ligatures or rubber bands will do much to make permanent, injuries to the gums. All foreign bodies between the teeth and under the free margins of the gums are injurious, such as insoluble particles of ingredients of dentifrices. All washes and lotions and pastes and salves, having free acids or corrosive acids, by rendering the teeth sensitive, injure the gums, because then they are not well cleaned.

Evils of Prepared Food.—You may guess that there are many other agencies that do harm in some way to the gums, but one which has not been dwelt upon by any writer during the past ten years is the growing habit of feeding children and adults with finely comminuted prepared breakfast and luncheon foods, many of which are predigested and placed before the sufferer in such a form that they do not require mastication at all ? Why are we endowed with thirty-two teeth if they are not to be used to bite, tear and chew food ? The teeth need the exercise and the gums need the friction, and as we look at it now they get neither the one nor the other in this age of ready-to-eat foods, many of which are no doubt nutritious, but not needed by the great mass of men and women who must work and exercise other portions of the body. If we are to keep our teeth in number, and form, and health, they must do their share of the work of the body to justify their place as organs. Foods and foodstuffs should be cooked or prepared in such a manner that they require mastication, and when eaten raw one of the pleasures of life is lost if they are bolted without mastication. You must realize that the gums are a part of the human economy, and you may take lessons from the lower animals, who eat slowly and carefully to insure perfect digestion. In order to have good, satisfactory masticating teeth, the gums must receive friction from the food you eat or they should be rubbed in some manner to insure perfect circulation and health. Teeth without gums are denuded teeth, and in many cases they are useless teeth. If you would save your patient much distress keep his gums in order, or make him do it, or show him how to do it. The teeth need their natural contour; if this is lost the gums suffer. This contouring of teeth must be applied in the making of crowns and bridges in order to protect the gums. An irritated or inflamed gum from lack of contour of the teeth will remain so, and even degenerate if the contour is not restored. I look upon the proper care of the gums from the personal standpoint of as much importance as the care of the teeth themselves.

Lesions of the Gum.—A lesion of the gum may be local, a physical injury, or it may be pathologic. Many, if not all the injuries, will recover with little or no treatment, if they are superficial, or if the cause of the injury is removed quickly, as the cutting away of a protruding filling, the removal of any exciting cause of trouble between the teeth. A crown which is too long may cause serious trouble to the gums and sockets of teeth if not cut away, or even a large filling that does not occlude properly will cause much trouble; swelling of the gums, even death of the pulp, has resulted from such cause. There is usually no drug aspect of the gums in purely local injuries, unless we include the application of an astringent, as zinc sulphate, lead water, boracic acid or one of the naphthol series in saturated solution. Most of the local hemorrhages are controlled by hot water, ferri-pyrine or adrenalin chlorid. Tannic acid, zinc acetate or alumnol could be used in such cases. When there is a suspicion of infection from a local injury 1 to 1000 corrosive sublimate, hot, 105 degrees F., or argyrol or mercurol will suffice. In the absence of all of the above, first cleanse the surface with hot salt water and paint with carbolic acid 95 per cent., or treat the surface with 25 per cent trichloracetic acid. Give the patient fifteen grain doses of sozoiodol, or four grain doses of quinine bisulphate every hour in one ounce of spirits.

Any case of local infection of the gums or mucous membrane of the mouth must first be cleansed; second, disinfected with local applications, and, third, internal administration of a drug that will combat sepsis—salol, iodine compounds, boric acid, mercury, the coal tar derivatives, such as the naphthol series. These cases generally are cared for by practitioners of medicine, but any dentist should know what to do and do it at once.

The lesions of the gums, having a distinct drug aspect, are those brought about through neglect, or by the presence of organisms, usually pus-producing organisms. A lesion defined as accidental, local or pathologic will need to be treated as such. Some general diseases have their effect upon the gums, as scrofula, syphilis, ptomaine poisoning, continued fevers and the exanthemata. Filth, poor nutrition and faulty assimilation are chargeable with gum lesions. The drug aspect of general diseases is limited to the local use of sprays, washes and general cleansers. Boracic acid, peroxide of hydrogen, sublimate solutions, beta, or hydronaphthol solutions, silver compounds, iodine, zinc, copper and strictly acid solutions, acetic, hydrochloric, trichloracetic, etc. The poorly nourished and those who do not assimilate need change of air, water and their general surroundings, as much as they need internal tonics; sometimes indeed they get well without anything more than sea air or mountain breezes with a change in diet and water. On several occasions I have sent my patients to French Lick Springs or West Baden, Indiana, and after ten days or two weeks found them much benefited by the use of the waters. In prescribing waters I find that drinking them is absolutely essential, as no benefit comes from the bathing alone. All cold waters simply give a shock and tone to the skin, and the heated waters by raising the temperature assist in eliminating poisons. None of the waters are absorbed to a degree sufficient to be considered as medicinal.

Some very excellent ideas on water may be found in Baruch's classic and in T. Sollman's work on Pharmacology.

The lesions of the gums requiring drugs are those proceeding from the apices of roots, the sides of roots and the surfaces of the gums themselves. In the latter the treatment is very simple. If the gums are cleansed with peroxide of hydrogen and then painted with the compound tincture of iodine, two or three coats, so as to get a new surface, and the patient is fed on liquid or semi-liquid food for two or three days, the gums will become clean and free from redness, irritation or a tendency to bleed. If a discharge exudes from between the gum and the root of a tooth, usually there is some concretion on the root, which must be removed mechanically or surgically, and the pouch or pocket cleansed or burned with some drug, as acetic, sulphuric, lactic, trichloracetic or citric acid in solutions in water of from 10 to 50 per cent. If the cutting and gouging have been well done, and the teeth are firmly lashed to each other or held by bands, and the medicine well injected in sufficient strength, Nature will have an opportunity to discharge all effete matter.

If the lesion proceeds from the apex, it means a dead pulp, and anything from cinnamon water to 95 per cent. carbolic acid could be used through the root to irrigate the fistula and the root may be filled with your favorite root-filling: wood, bone, silk, oxychloride, wax, gutta percha, cotton, silver, copper or gold wire, salol or chalk. Abscesses do not heal, to stay healed, unless the end of the root is sealed. Sometimes it is necessary to amputate the portion of root necrosed before the lesion will disappear.

I am a strong believer in keeping the gum margin intact, therefore I do not favor the indiscriminate use of wooden toothpicks, floss silk or rubber bands. The patient who expects to keep his gums in order must have his teeth well contoured; they must occlude well. All crowns or bridges should be contoured on the portions that are attached to roots of teeth. The gums must be scoured and washed and massaged daily to prevent tendencies to bleed. If the teeth are sensitive to the air or to touch, magnesia, chalk, soda or lime must be used to counteract this. If the gum has been denuded from the neck of a tooth and the patient is still young enough—say under forty—you can coax it to grow and recover the root in part by great care, and stimulating it gently with iodine and zinc iodide and 10 per cent. resorcin painted on it at intervals of one to two weeks. This is very tedious and requires much patience; these remedies must be alternated and changed about every six weeks. When you are trying to build gum tissue the patient must use a Badger brush and a dentifrice composed of one part white castile soap and nine parts of precipitated chalk. Occasionally I add 20 grains of powdered quillai saponaria to a 10-ounce prescription. This may be perfumed with any oil and colored with carmine or cochineal, *Dentifrices and Mouth Washes.*—The gums always do well when they are properly rubbed or massaged with water about 53 to 60 degrees F.; warm water is relaxing. Dentifrices are for the teeth, not the gums. Washes are for the gums, and the mucous membrane of the mouth. Washes are intended to be used as remedial agents and germ destroyers.

A very useful wash is composed of:

Hydronapthol or betanapthol	ʒi.
Menthol	gr. iiss.
Oil cinnamon or cassia	
Oil wintergreen	āā ♏v.
Glycerine	
Alcohol	āā ℥iij.
Distilled water	ʒx.

M. Sig.: Use as a mouth wash, full strength.

Mouth washes are like the hairs of your head—numberless; but as they are used they do not accomplish very much. In order to be effective the mouth must be scrubbed first, and then rinsed with cool water, and the wash is then introduced in a small quantity, 1-2 teaspoonful; the gums are rescrubbed for from one to two minutes, and the effect of the wash left to be diluted with the saliva. Even with this care the organisms are not all destroyed as a rule.

The Finsen Ray.—Any treatise on the gums would be incomplete if it did not consider the possibility of the use of the Finsen ray for the arrest of pus production. I have for a few months been using this ray in a limited number of cases, and it appears to me that we will have less use for drugs in the so-called pyorrhea after a year or two than we now have. There are still some difficulties to be overcome in the general use of the Finsen system, in its application to the gums, but they are not insurmountable. The bactericidal effect of the ultra-violet ray is produced in something like four to five seconds in a field, with full exposure, by a Bang lamp,* while the arc light exposure requires about five minutes to destroy a culture of the staphylococcus pyogenes aureus. A slight erythema lasting for some days may always be expected in the use of the ultra-violet—the invisible ray. If this is brought in contact with the hair follicle, the hair will drop out and the nails may become brittle.

In the treatment of the gums these accidents are not likely to occur.

Very shortly there will be on the market a sufficiently simple apparatus for gum treatment, which will make it possible for any one to use the ultra-violet or invisible ray, even in the treatment of other affections of the gums.

From many years of observation of the gums I am convinced that the instruction given by the dentist to the patient is not sufficiently clear or impressive to do the greatest good, therefore, I appeal to you to give a demonstration every time you find any discharge from between the gum and the tooth to make it an object lesson. Cases of this kind may improve with drugs alone, but a certain amount of delicate and exact surgery is requisite to effect a cure which will not be permanent unless great care is exercised continuously by the patient.—*Items of Interest.*

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*Turner Medical Electricity, 3d edition.

DENTAL EDUCATION.

By J. H. Badcock, M.R.C.S., L.D.S.,
Dental Surgeon, Guy's Hospital, London, Eng.

Paper read before the Manchester Odontological Society.

When you did me the honor to give an invitation, through your President, to read a paper before you upon "Dental Education," my first impulse was to decline it. I have never given the attention to the subject which alone could form an adequate excuse for introducing it before your Socity, having, as it does, so many among you whose experience, whose judgment, and whose knowledge of educational matters are so vastly superior to my own.

But I reflected then it might seem discourteous to refuse so high a compliment, and, moreover, that I could not afford to lose an opportunity of hearing the subject discussed in all its bearings with that sound common sense which is so characteristic of Lancashire men.

There has been much searching of hearts in these islands of late. We have been told that England must "wake up," and she is slowly awakening with much astonishment and only half belief to the fact that she has lost that supremacy in science and manufacture that distinguished her fifty years ago. There is a general sense of uneasiness, a growing dissatisfaction, and a belief that something is wrong. We are told that if we are to retrieve our lost position—nay, even to maintain a respectable equality with other nations—we must make the most strenuous efforts. When we ask what direction reform is to take, where the evil lies, representatives of different schools of thought point to our educational and fiscal systems. Just as it is the duty of every citizen to give those matters his earnest attention as affecting the safety and welfare of the empire, so it is the business of every professional man to consider them in their relation to his own specialty.

How does Dental Surgery stand?

What about our educational system?

Is it such as to ensure the highest possible efficiency?

Is it such as to achieve for British Dentists the highest position among those of other nations ?

Before we can answer these questions we must yet ask others.

What place does the dentist fill in the scheme of society?

What are his functions ?

What are the qualities of heart and head and hand that are demanded for the most satisfactory fulfilment?

First and foremost, he is the servant of the public. It is his business on its behalf to wage war against disease, to devise means for its prevention, to hold it in check, and to repair its ravages.

To this end he must both be a philospher, ranging wide over the fields of knowledge, ready to gather from every source facts, theories, and suggestions bearing upon the science of his calling, and a craftsman, translating his science into art.

And inasmuch as his art is, by its nature, very exacting, and, moreover, practised upon the sentient bodies of his fellow-men, he needs qualities of devotion to duty, of patience, and of sympathy in generous measure.

Now this public, which the dental profession serves, is very large; probably it would not be an exaggeration to say that not less than 90 per cent. of the whole population of Great Britain and Ireland need at some time attention to their teeth; the bulk of it is poor, and an all-too-large proportion very poor.

How can its demand be most efficiently met? I think by a division of labor, such as naturally comes about in many professions. There always exist leaders, the few, and followers, the many; the scientific workers and the busy practitioners.

The function of the few is to keep in touch with the progress of every department of scientific thought and work, to adapt therefrom to their own special subject whatever may have any bearing upon it, to carry on research, to perfect theory and to formulate principles. These form the "Intelligence department" of a profession.

The function of the many is to carry out, to translate into usefulness, the principles enunciated by the few. They are the executive.

To some extent the functions of the two classes are combined in every intelligent practitioner who gains knowledge by experience, and applies that knowledge to his practice; but for educational purposes they may be considered as being distinct.

As the population is large, the number of practitioners must be large also; and, as the tenth of the population is poor, the educiation and training of those practitioners who are to supply its needs must involve as small an expenditure of time and money as is consistent with skilled craftsmanship and with such a sound knowledge of the scientific principles which underlie their art, as will enable them to practise it with judgment and discretion.

Until trained dentists are forthcoming in sufficient numbers to meet the demand, the deficiency will continue to be supplied by the unqualified and unregistered, to the injury of the public and the detriment of the profession.

While the law protects title only, competition by qualified men with the quacks who abound in our industrial centres in such large numbers is impossible unless the expense of their training be kept at the minimum.

It must always be borne in mind, too, that laws are made for the protection of the public and not the individual, and that there is little chance of the prohibition of practice, until such time as a sufficient body of qualified dentists shall be forthcoming to fill the gap left by those who would be displaced by an alteration of the Dentists Act in that direction.

Hence it would seem in the highest degree unwise and impolitic to increase the present cost and difficulty of obtaining a pass diploma.

There should be one portal to the profession only, a License in Dental Surgery, granted by the State, after a State examination. This State-granted license should form the sole qualification on the Dentists' Register and should be based upon the minimum of education required by the dentist in the interest of the public.

It is for this reason that I regard the tendency, which I am told exists among universities to grant registrable diplomas, as a retrograde movement. We were informed the other day that the University of Dublin had decided to grant an L.D.S., and I believe that you in Manchaster are considering a like course of action in the Victoria University. Surely the function of universities is, not to compete with one another in the granting of licenses (a course which can hardly fail, as the competition gets keener, to produce a lowering of standards), but to advance education and push forward the bonds of knowledge by granting degrees, each striving with the others to make its own the most valuable distinction, and the most powerful stimulus to research and progress in the particular field of knowledge to which it refers. In this respect the University of Birmingham has set an excellent example, as its degree in dental surgery is open only to those holding an L.D.S. diploma. The existence of a number of diplomas, with the same title, but varying standards, in no sense constitutes a one-portal system, but is unfair to the profession and misleading to the public.

As we have no State examination at present, it is much more desirable that instead of increasing the present number of L.D.S. diplomas we should endeavor to induce the four Colleges of Surgeons of England, Edinburgh, Glasgow and Dublin to cooperate to grant one only, holding joint examinations for the purpose in various centres in the United Kingdom.

What modifications, if any, are advisable in our present scheme of education for the L.D.S.?

Let us go back to the beginning, the school days of the boy who is to be a dentist.

The aim of the school should be education, rather than instruction, the formation of character, the training of the intellect, the development of the power to think reasonably and to judge justly; the inculcation of habits of diligence and self-restraint, the acquirement of the love of learning and the ability to learn, rather than the imperfect assimilation of a multitude of facts.

This aim may be attained by literary or scientific studies alike, if properly conducted, but a better preparation for the boy's special work in life will be obtained if those subjects are selected which have most bearing upon it.

Foremost in importance is a correct knowledge of English composition. He should be able to write, speak, and even spell his own language correctly. Accuracy of thought goes with accuracy of expression, and accuracy of expression and accuracy of thought mean accuracy of work. Does a rarer or more valuable quality exist?

The study of Latin is valuable, both for the excellent mental training which it affords, and because of the help it gives to knowledge of English and the Romance languages, to say nothing of its extensive use in scientific nomenclature.

Of modern languages, at least a reading acquaintance with French and with German is necessary, if the dentist is to keep abreast of the progress of his profession.

The present almost universal ignorance on the part of the average Englishman of any language but his own, is little less than a national disaster.

It restricts his outlook, his sources of knowledge and his sympathies, and is accountable for many of the insularities which make him so unpopular with other peoples.

Some knowledge of mathematics is a necessity of life, and its study tends to the development of the reasoning powers and the creation of a scientific habit of mind.

For the same reasons physical science should receive a large share of attention, also, because of the bearing which it has upon future work.

Literature and history supply human interest, widen the sympathies, and broaden the mind.

Attention should be given to manual training from childhood. The muscles cannot too soon learn co-ordinate action, and the boy who has been accustomed to use tools, and his wits, for all sorts of odd jobs, will start upon his professional career with a great advantage.

For developing delicacy and precision of touch and cultivating the faculty of observation, there is nothing superior to the study of drawing. Moreover it provides a never failing source of interest and relaxation in after-life.

Athletics must receive their fair share of attention. Other things being equal, the more athletic the more efficient, both mentally and physically, a boy will be.

With the advantages of modern educational methods, an average boy should have no difficulty in passing a good examination in these subjects before the end of his 17th year, and, possibly, the " Preliminary Science Examination " as at present demanded by the R.C.S. England into the bargain.

" This," you will say, " goes far beyond the present requirements of the General Medical Council. Does it not involve the extra time and expense which you are so anxious to avoid?" I think not. The present standard is too low. It demands four subjects only. English, Latin, Mathematics and Greek, or a modern language. Such an examination could be easily passed by a boy of 15. If we are not to be left behind, the educational standard of the country at large will have to be raised, and our requirements form no exception.

As it is, the boy seldom leaves school much before 17, an age sufficiently early.

Here school life ends, and the student enters upon his strictly professional education, the first two years of which he *must* spend at the bench.

As to the value of such training we in this country are all agreed.

Prosthetic dentistry forms a very important branch of our work.

The young practitioner is often called upon to do his own mechanical work, and later, when his time becomes more fully occupied, to train his own mechanism.

Even in those cases where he can command the services of an efficient mechanic from the first, it is of the utmost importance that he should be thoroughly conversant with all the details of the prosthetic art.

It is he who must design each denture to meet the special needs of the particular case.

And there is another reason why the dental surgeon should be a skilled mechanic. If he is to be in a position to demand the best possible work of his assistant, he must always be prepared to enforce his criticism by example, to take the tools from his hand, and then and there to show him how such and such a thing ought to be done; only so will he command not only obedience to his wishes, but respect.

But useful though this training may be to enable the future practitioner to know what good prosthetic work is, and in enabling him to obtain it, it is more valuable still as manual education for the more delicate work of conservative dentistry.

Were prosthetic work entirely removed from the practice of the dental surgeon, this digital training would still be indispensable.

To obtain the best results, the course of dental mechanics must be commenced young, certainly not later than the age of 17.

In youth, elaborate co-ordinations of muscular actions are readily learned, which later in life are vastly more difficult of acquirement, or even impossible in the same perfection.

Good craftsmanship is of much greater importance in dentistry than in any other branch of surgery.

The surgeon only assists at an operation, Nature finishes it for him. He will be a better surgeon for being also a good mechanic, but so long as he observes the main principles of surgery, his manual dexterity need not be very high.

But the dentist must finish his operation for himself, and on the perfection of his manipulation will chiefly depend the success of his treatment.

The student has the option of taking this training in dental mechanics, either by serving an apprenticeship to a registered dental surgeon, or by entering a laboratory of mechanical dentistry at some school recognized for this purpose.

For the apprenticeship system it may be agreed that in many cases it is more *convenient*.

A youth may be articled to the local practitioner and still continue to live under his father's roof, which could not be the case were he obliged to attend some dental school, unless he should happen to reside in a centre where such a school was situated.

There are many objections to sending a lad of 17 to live by himself in lodgings in a town where, possibly, he may have no friends, cut off from home influence at an age when his judgment is immature, and his knowledge of the world nil.

At some schools, doubtless, this objection might be met by a residential college, with its discipline and supervision ; but this will be the exception rather than the rule for some time to come.

A private workshop, where the principal takes an interest in his pupil, apart from his premium, and has the leisure to teach him, or where the mechanic is both able and willing so to do; where there is plenty to do and where it is well done, is perhaps the very best school after all.

The pupil is always engaged upon work which has the real interest of bing useful. It is important work, too, and habits of carefulness are insisted upon, which becomes second nature. Moreover, the work is varied, and presents every difficulty that the student will meet with hereafter. Close bites, difficulties of attachment, or arrangement, or construction, whims of patients, all have to be taken into consideration, each case on its individual merits.

And he sees results, dentures that have been worn for years, and are still doing good service, others that have not done so well, and have failed for one reason or another, and thus, if he be intelligent, he is able to collect experience of the greatest value.

Not only does he learn how to perform the various operations of mechanical dentistry, but their frequent repetition imparts facility not otherwise obtainable.

Moreover, he may acquire much useful knowledge of the *management* of a practice and the treatment of patients, and, if his chief be a man of ability and character, may be strongly influenced for good by his example and precept.

If he has not already passed his examination in chemistry and physics, he should study for it during this period, so as to take it before entering the hospital.

Unfortunately, the state of things which I have described, is the exception rather than the rule. Teachers in dental schools know only too well that the great majority of the men who present themselves at the hospitals as having completed at least two years of their pupilage, are ignorant of the merest rudiments of mechanical dentistry. They have no idea of neatness or delicacy of touch, they are not able to cast or cut up a model properly, their methods are the roughest, and their knowledge the most imperfect to a degree. Well taught, they would have acquired more knowledge in three months.

One is forced to the conclusion that a large number of dentists regard their duty to their pupils as ended with the receipt of the premium.

Instead of business habits being insisted upon, the boy is allowed to come, or to absent himself, as he pleases, and when he does come he receives no methodical instruction, but must be content to pick up what he has a mind to, from the mechanic.

The pupilage system as it exists at present, while in a small percentage of cases it affords a training difficult to improve upon, is as a whole a failure, and, I believe, is doomed to disappear.

A course of training in the laboratory of a dental school should ensure efficient instruction and discipline. While the pupil would lose by the elimination of the more personal teaching possible in private, and would probably not see such an extensive range of cases (for in the practice of a hospital to which a school is almost necessarily attached, only cases where a number of teeth have been lost, and the general health is suffering thereby is usually treated) he should be able to gain an acquaintance with every known mechanical process and method, a thing impossible in a private laboratory, however good.

Moreover, his practical work may run side by side with the study of chemistry and physics needed for his preliminary examination, supposing that he has not passed this from school; the teaching being specially arranged to show the bearing of the sciences on practical everyday work.

The examination in chemistry and physics passed at the end of the first year, he would be free to attend lectures and demonstrations in metallurgy and mechanical dentistry (subjects which could be most easily learned and effectively taught *pari passu* with practical work at the bench) and receive instruction in the adjustment of dentures to the mouth, passing the "first professional" examination at the end of the second year.

This would leave him two clear years for hospital practice, and the study of the subject of the final examination.

At present when the student enters the hospital he has usually not taken his preliminary science examination. This suggestion that the first professional examination should be taken at the end of the second year, and not in the end of the third year as heretofore, could only be carried into effect in the event of the abolition of private pupilage; but for this step, though bound to be taken eventually, the time is hardly ripe. Until there are a great many more dental schools than exist at present, the abolition of private pupilage would tend to reduce the numbers entering the profession, because it would oblige the intending dental student, who did not live within reach of a dental school, to leave home two years earlier than if he were to serve his pupilage with a practitioner in his own town.

There is one course which might ensure better teaching in the private workshop, and that is the establishment at every dental school of an entrance examination, at which the student must satisfy the examiners that he possesses a fair practical knowledge of dental mechanics, or be refused admission. The dental surgeon who takes pupils would then be obliged to afford efficient instruction, or to face the indignation of the parent whose son failed at his entrance examination.

Familiar with the technique of the laboratory, and with his fingers trained to delicate work, the student should at the end of two years be fit to enter a dental and a medical school with hospitals attached.

At these institutions he willl learn the operations of dental surgery and their scientific bases.

There are some who would sever this connection with a medical school and who would prefer to see the dentist receive his whole professional education in a dental school, from dentists.

I believe that the connection between the dental and medical schools which exists in this country is most healthy and valuable.

Apart from other considerations, the close relationship into which dental and medical students are brought thereby is no slight advantage.

The dental student has not time, and indeed does not need to cover the whole field of surgery or anatomy or physiology; but only that part which is in closest relation with his specialty. But a teacher should know a great deal more than he is called upon to teach, he must have a wide outlook, though his teaching be confined to a small area; he must know the relation that the part bears to the whole; he must be familiar with general principles and apply them to special cases. Therefore the teacher of surgery should be a general surgeon, of bacteriology a general bacteriologist, and so forth. Only so will the student learn to view his specialty in its proper relations.

How much knowledge of "general" subjects, as they are called, should be demanded of the dental student? Ought he, for instance, to know the anatomy of the knee joint, or the physiology of lactation?

To this I would answer: "He should study the structure of joints in general, the parts played by bone, ligament, cartilage, and synovial fluid as illustrated in the temporo-maxillary articulation."

"He should know the physiology of gland action as illustrated in the salivary glands."

"He should know surgery, anatomy and pathology, as they affect his special subject, and what he does know, he should know well. More cannot be expected of him, and a little thoroughly understood is better than a smattering of knowledge over a wide area."

The teaching should be as practical as possible.

Attendance on long courses of lectures on surgery, medicine, anatomy and physiology should not be insisted upon, but special courses, partaking as much as possible of the nature of demonstrations, should be arranged for the dental student.

Turning to purely dental subjects, the comparative study of dental anatomy might be wholly eliminated, except in so far as it may be necessary to elucidate the structure and development of the human tooth.

For it, might be substituted a far more thorough study of the human tooth than obtains at present. The student should be required to make sections of human teeth, both vertical and transverse, in various planes, and to make prints of such sections, until thoroughly conversant with the position and direction of the pulp canals, the relative thickness of the pulp cavity and canals at different points, their relations to the surface and the most common departures from the normal. He should study, similarly, numerous sections of jaws with teeth *in situ*, cut in various directions and at different levels. He should be required to "spot" any particular tooth from among a number. In such ways he would gain practical knowledge of the utmost use to him in his everyday work, be it filling or extraction.

If it be recognized that the curriculum for the L.D.S. diploma should not aim at providing the widest and most liberal education that is possible for a dental surgeon, but that its object should be to give only that which is necessary for efficiency in practice, the question of what a man should be expected to know, and what he should not, would become much easier of solution. At present the teacher of the "general" subjects does not know how much to teach, the student how much to learn, or the examiner how much to ask. This confusion is largely due to the fact that the standard demanded by the English College of Surgeons is, from time to time, screwed up in the endeavour to make the one diploma serve two purposes, viz., that of a licence to practise, *i.e.*, a guarantee that its holder possesses sufficient skill and knowledge to serve the public; and that of a certificate of the highest qualifications that a dentist can possess; two purposes that would be properly served by two diplomas; a license or a degree or other honors distinction.

I think I hear someone say, "We want no honours distinction. The L.D.S. supplies all that is needful for practice. If a man wants more let him take a medical diploma."

Now, a medical diploma is designed to fit a man for the practice of general medicine, not of dentistry, and, indeed, the surgery of the teeth is the one branch that is altogether left out of its curriculum.

The dental student, who, desirous of widening his knowledge, and possibly qualifying himself for research, takes up a course of study in medicine, will gain much that is useful to him, will fail to obtain much more that would be useful, will get a great deal that is useless, while for a period of two or three years he will probably be obliged to entirely forego the practice of his art. That is my answer.

A thorough knowledge of the science of disease (pathology) and its underlying sciences of anatomy and physiology is of the greatest importance; very essential, too, is a knowledge of the principles of surgery, but their applications to other branches than his own are of little value to the dental surgeon. The mechanism of labor, the procedure necessary for an operation for the enucleation of the prostate, or the signs of death by drowning, for instance, do not concern him.

There is a side to dentistry which no other branch of medicine possesses, and which brings it into close relation with certain branches of physical science.

The surgeon deals with flesh and bone, the dentist with dentine and enamel. He must employ different instruments, different materials, and a different art.

In his treatment he uses metals, cements, porcelain, and vulcanite. If he is to advance his methods he must be conversant with the sciences of chemistry and physics, underlying the manufacture and behavior of these substances and their components. He should know the lines on which to work in order to produce a transparent cement for securing a porcelain inlay, or a white filling that will endure in the mouth.

Bacteriology, physiological chemistry, biology, zoology, and comparative dental anatomy, might be added to these to form a list of subjects necessary for research work in various directions, and from such a list could be selected, by the choice of the student, one or more to take the place of those subjects in the medical curriculum which are of no value to him.

And during the whole period of study he should have frequent operative practice to improve his manipulative skill.

Such is a very rough outline of the course of study which might be provided, as a preliminary to an honors degree.

There is one other point. In order to keep thoroughly abreast of the progress of a profession, it is necessary not only to read about what is going on in other countries, but to see it.

Scholarships should be established to enable the brilliant students, who could not otherwise afford it, to travel abroad for a year, and acquaint himself with the progress of dental science in the schools of Europe and America.

In this direction Guy's Hospital has set the example, and grants biennially a travelling scholarship of £100 to the most distinguished of its students during the past two years, with the proviso that he must be prepared to accept a post on the teaching staff of the school on his return, if so desired.

To recapitulate: For the public weal it is desirable to train efficient dentists in considerable numbers.

In accepting any scheme of education, it must be borne in mind that the curriculum demanded for a license to practise, must not be so costly as to put the services of the holder beyond the reach of the poorer classes.

It is desirable that there should be only one license to practise, and that granted by the State, after a uniform examination under State auspices.

If British dentistry is to hold its own in the rivalry of nations, the creation of an "Intelligence department," a trained body of research workers, is a necessity; and this end can best be attained by special courses of training, such as would be provided by the institution of "honors degrees" in universities.—*Dental Record.*

Proceedings of Dental Societies

WESTERN ONTARIO DENTAL SOCIETY.

The dentists of Western Ontario, including the executive of the Western Ontario Dental Society, while in attendance at the recent Ontario Convention, met and decided that, owing to the International Convention of St. Louis and the meeting of the Canadian Dental Association, both taking place next summer, the 1904 meeting of Western Ontario Society be withdrawn.

C. A. SNELL, *Secretary.*

COLLEGE OF DENTAL SURGEONS, N.W.T.

The first meeting of the Council of the College was held in Regina, February 13th, 1904. The following officers were elected: President, Dr. McClure, Lethbridge; Vice-President, Dr. Cowan, Regina; Secretary-Treasurer, Dr. Size, Moosejaw; Recording Secretary, Dr. Edmonds, Calgary.

FOURTH INTERNATIONAL DENTAL CONGRESS.—COMMITTEE ON STATE AND LOCAL ORGANIZATIONS.

The Committee on State and Local Organizations is a committee appointed by the Committee of Organization of the Fourth International Congress with the object of promoting the interests of the Congress in the several States of the Union. Each member of the committee is charged with the duty of receiving applications for membership in the Congress under the rules governing membership as prescribed by the Committee on Membership, and approved by the Committee of Organization. These rules provide that *membership in the Congress shall be open to all reputable legally qualified practitioners of dentistry.* Membership in a State or local society is not a necessary qualification for membership in the Congress.

Each State chairman, as named below, is furnished with official application blanks and is authorized to accept the membership fee of ten dollars from all eligible applicants within his State. The State chairman will at once forward the fee and official application with his endorsement to the chairman of the Finance Committee, who will issue the official certificate conferring membership in the Congress. No application from any of the States will be accepted by the chairman of the Finance Committee, unless approved by the State chairman, whose endorsement is a certificate of eligibility under the membership rules.

A certificate of membership in the Congress will entitle the holder thereof to all the rights and privileges of the Congress, the right of debate, and of voting on all questions which the Congress will be called upon to decide. It will also entitle the member to one copy of the official transactions when published, and to participation in all the events for social entertainment which will be officially provided at the time of the Congress.

The attention of all reputable legally-qualified practitioners of dentistry is called to the foregoing plan authorized by the Committee of Organization for securing membership in the Congress, and the Committee earnestly appeals to each eligible practitioner in the United States, who is interested in the success of this great international meeting to make application at once through his State chairman for a membership certificate. By acting promptly in this matter the purpose of the committee to make the Fourth International Dental Congress the largest and most successful meeting of dentists ever held will be realized, and the Congress will thus be placed upon a sound financial basis.

Let everyone make it his individual business to help at least to the extent of enrolling himself as a member and the success of the undertaking will be quickly assured. Apply at once to your State chairman. The State chairmen already appointed are:

General Chairman—J. A. Libbey, 524 Penn Ave., Pittsburg, Pa.

STATES.

Alabama—H. Clay Hassell, Tuscaloosa.

Arkansas—W. H. Buckley, 510 1-2 Main Street, Little Rock.

California—H. P. Carlton, Crocker Building, San Francisco.

Colorado—H. A. Fynn, 500 California Building, Denver.

Connecticut—Henry McManus, 92 Pratt Street, Hartford.

Delaware—C. R. Jeffries, New Century Building, Wilmington.

District of Columbia—W. N. Cogan, The Sherman, Washington.

Florida—W. G. Mason, Tampa.

Georgia—H. H. Johnson, Macon.
Idaho—J. B. Burns, Payette.
Illinois—J. E. Hinkins, 131 E. 53rd Street, Chicago.
Indiana—H. C. Kahlo, 115 E. New York St., Indianapolis.
Iowa—W. R. Clack, Clear Lake.
Kansas—G. A. Esterly, Lawrence.
Kentucky—H. B. Tileston, 314 Equitable Building, Louisville.
Louisiana—Jules J. Sarrazin, 108 Bourbon Street, New Orleans.
Maine—H. A. Kelley, 609 Congress Street, Portland.
Maryland—W. G. Foster, 813 Eutaw Street, Baltimore.
Massachusetts—M. C. Smith, 3 Lee Hall, Lynn.
Michigan—G. S. Shattuck, 539 Fourth Avenue, Detroit.
Minnesota—C. A. Van Duzee, 51 Germania Bank Building, St. Paul.
Mississippi—W. R. Wright, Jackson.
Missouri—J. W. Hull, Altman Building, Kansas City.
Nebraska—H. A. Shannon, 1136 "O" Street, Lincoln.
New Hampshire—E. C. Blaisdell, Portsmouth.
New Jersey—Alphonso Irwin, 425 Cooper Street, Camden.
New York—B. C. Nash, 142 W. 78th Street, New York City.
North Carolina—C. L. Alexander, Charlotte.
Ohio—Henry Barnes, 1415 New England Building, Cleveland.
Oklahoma—T. P. Bringhurst, Shawnee.
Oregon—S. J. Barber, Macleay Building, Portland.
Pennsylvania—H. E. Roberts, 1516 Locust Street, Philadelphia.
Rhode Island—D. F. Keefe, 315 Butler Exchange, Providence.
South Carolina—J. T. Calvert, Spartanburg.
South Dakota—E. S. O'Neil, Canton.
Tennessee—J. P. Gray, Berry Block, Nashville.
Texas—J. G. Fife, Dallas.
Utah—W. L. Ellerbeck, 21 Hooper Building, Salt Lake City.
Vermont—S. D. Hodge, Burlington.
Virginia—F. W. Stiff, 2101 Churchill Avenue, Richmond.
Washington—G. W. Stryker, Everett.
West Virginia—H. H. Harrison, 1141 Main Street, Wheeling.
Wisconsin—A. D. Gropper, 401 E. Water Street, Milwaukee.

For the Committee of Organization.

EDWARD C. KIRK, *Secretary.*

MONTANA STATE DENTAL SOCIETY.

The first annual meeting of the Montana State Dental Society was held in Helena, Montana, February 22nd and 23rd, when the following officers were elected: Dr. W. H. Barth, President; Dr. J. D. Sutphen, 1st Vice-Pres.; Dr. Jos. Oettinger, 2nd Vice-Pres.; Dr. Geo. Longway, Secretary; Dr. W. M. Billings, Treasurer. The second annual meeting will be held in Butte, February 20th and 21st, 1905.

GEO. E. LONGEWAY.

DEGREE OF DOCTOR OF DENTAL SURGERY.

Notice is hereby given that the regulations recently announced affecting the D.D.S. degree will cease to have any force or effect on and after the 1st day of October, 1904, except for students already enrolled.

Also, notice is hereby given that the University of Trinity College, Toronto, has entered into a federation agreement with the University of Toronto, which will take effect on the said 1st day of October now next.

By the terms of this agreement :

1. All students entering after this date (in any faculty, except theology) must proceed under the curricula of the University of Toronto.

2. All undergraduates of Trinity University will be allowed to complete their course, within a period of six years, under the curricula in force in that university at the time of their matriculation.

3. All graduates of Trinity University (except only those in theology) will be enrolled *ad eundem gradum* in the University of Toronto.

In all matters touching the faculty of theology, the University of Trinity College will remain still an independent university, retaining all the rights and privileges heretofore enjoyed by it in this regard.

T. C. S. MACKLEM, M.A., D.D., R. J. READE, M.A., D.D.S.,
Vice-Chancellor. *Sec. Bd. of Dental Studies.*

Trinity College, Toronto, 1st February, 1904.

Directory of Official and Voluntary Dental Associations and Societies of Canada

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Yukon Dental Board.

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VOLUNTARY

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La Societe d'Odontologic Canadienne Francaise

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Montreal Dental Club.

President—C. F. Morison, D.D.S., 14 Phillips Square, Montreal, Que.
Secretary—F. W. McKenna, D.D.S., Montreal, Que.

The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
93 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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REMARKS ON THE CANADIAN DENTAL ASSOCIATION.

When the Ontario Dental Society, which met in Toronto, February 8th, 9th, and 10th, was called to order, J. B. Willmott, the President of the Canadian Dental Association, made the following remarks:

At some time during this meeting I mean to place before the Association the claims of the Canadian Dental Association which meets in September next. We are glad to see so many present under such adverse circumstances on this occasion. We hope that every man that is here now will be here next September, and meet with the dentists from the extreme East and West. We are promised a large number of men from Quebec, New Brunswick and Nova Scotia, and we feel sure that we can count on the dentists of the West. We had an exceedingly profitable meeting in Montreal last summer, and a large number of those present promised to attend here. We are arranging to have it in the second week of the Provincial Exhibition, and we expect to be able to take advantage of the very cheapest railroad rates, so that the cost of coming will be reduced to a minimum. What we are afraid of is the International Dental Conference being held at St. Louis, about that time, and which takes up a full week from August 29th to September 3rd, and we want the dentists of Ontario to leave St. Louis, so that they can be here in time to attend our convention, which takes place the following week, and as it only takes twenty-four hours to come from St. Louis to Toronto, I think it can easily be managed. The committee in charge of the Canadian Dental Association would be pleased to have the dentists attend the St. Louis meeting and then return to ours. This is going to be one of the most important meetings in the history of dentistry in Canada. Among other things to be discussed will be the report of an official provisional Dominion Dental Council. Each Province has appointed a representative to try and come to some mutual agreement by which a man can get a certificate that will entitle him to practise in any part of Canada without passing any further examination. We think that this, added to other highly important matters of the meeting, ought to attract a very large audience.

We think that the Ontario dentists, as represented by this Association, should do something to entertain our brothers from the extreme West and East. Our Quebec friends entertained us very well at Montreal. I understand that our committee proposes to entertain the dentists from outside without calling on them to pay for it. The committee which has this matter in charge will report to you later, and all I have to say to you is that I want you to feel a personal interest in this meeting, and we want you to help to make it the largest and most interesting meeting ever held in Canada.

ONTARIO MEETING.

The Ontario meeting has come and gone once more. Every year sees an increase in the number in attendance. This year two hundred and twenty-three registered. If conditions had been more favorable, the chances are there would have been a much larger attendance. The programme committee had much difficulty in securing essayists in time, to have had sufficient notice sent out. A very severe storm was raging at the time of the meeting, which prevented numbers of the old standbys from attending. Many trains were wrecked throughout the Province owing to ice on the tracks, which made travel very hazardous. When such a large attendance can be secured under such adverse circumstances, it is quite safe to predict that the meeting of the Canadian Dental Association in September next, when weather conditions will be favorable, and cheap railway rates in force, will be a bumper meeting. The committees are preparing for five hundred.

Does anyone realize that only ten years ago, at a meeting of the Ontario Society, there were not forty members present, and now that there are over two hundred and twenty? Ten years ago members of the profession were ashamed to admit that their *alma mater* was over a cabinet shop in Louisa Street. Now, they point with pride to the college near Queen's Park on College Street. What does it all mean? Progress, yes, progress in large capitals. No one in his wildest dreams would have foretold such doings. Nor are we satisfied. There is a cry for more from every quarter. Students call loudly for more instruction on a wider range of subjects. Those who were leaders ten years ago are being outdone to-day, and those who are leaders to-day will be outdone by those of to-morrow. If any dentist in Ontario thinks he can stand by, and still be in the running, he is earning his own undoing. No dentist should think because he has enjoyed the confidence of the public for a few years that he will continue to do so for ever without progress in both the art and science of dentistry. There are those who are making such progress, and they will be noticed.

SOME THINGS.

The clinics on the first day of the meeting was all right. Though the arrangements for giving clinics were somewhat better than other years, yet there is room for improvement. Some device should be made for seeing more clinics thoroughly. The discussion of the clinics was not an entire success. It took too long, and many of the clinicians were not prepared to make a lecture-room demonstration. To discuss the clinics is all right, but the method will have to be improved.

The essays were good, and vigorously discussed. Would it not be as well to cut out the time-honored apologies as part of an essay. No apology was needed for any of the essays presented, though some of them were written under very adverse conditions. The programme committee is grateful beyond words to one or two members who came to their rescue when other hopes had failed. Men are few who will accept a responsibility with a will, and work to live up to the trust.

Discussion—well, the less said about it the better, or perhaps the more the better. Everybody comes away with the fine speech he was going to make, and those who didn't make one always saw where the other fellow was either off the subject or wrong. It is very easy for a discussion to drift so far from the subject that those who speak forget all about the essay. It does seem to be cruel, or spiteful, or some other bad thing to call time on a speaker, and yet what advantage is it to a body of busy men to listen to a lot of swash about capital I. Once is often enough for a speaker on a subject. Then, to talk about trade, business, prices and opposition, is hardly up to professional ideals. To open a discussion with the remark that the speaker knows nothing about the subject, and then to go on talking for twenty minutes admits of criticism. But, for all, the discussions were good, and helped others to think.

The complimentary luncheon by the natural food company was a good feature. The evening dinner was difficult to manage. Members would not buy tickets in time for the caterer to make adequate preparations. Fully twenty-five more attended than was expected. The caterer did not live up to his contract. There was much delay. Professor Clark was shut off with only a few minutes' talk. The chairman of the committee was disappointed at every turn, though his arrangements were perfect. It only shows how even those with the most experience will be deceived sometimes.

It might be worth while to consider the advisability of holding the meeting later in the year, say about the second or third week in March. At that season, the weather conditions would be more favorable, and it might be possible to pool the attendance with the Ancient Order of United Workmen, who hold their annual meeting in the third week in March, and thus secure a single fare return.

The reports of the clinics should be sent in at once, so that they may be put in the proceedings.

CANADIAN DENTAL ASSOCIATION.

The Canadian Dental Association meets in Toronto, September 6th, 7th, 8th, and 9th, 1904. This will be the second meeting, and the largest and most representative ever held in Canada. Local committees are at work arranging the details. The programme is being arranged as rapidly as possible. Dr. Edward H. Angle will discuss that phase of orthodontia pertaining to the bases of his modern ideas on the subject. Through the able assistance of Dr. Dubeau, of Montreal, the vice-president, we have secured the consent of Dr. Sauvez, of Paris, France, to be present, and read a paper. Dr. Godou, of Paris, will also be present. These distinguished gentlemen will be remembered as the president and secretary of the Great Third International Dental Congress, held in Paris, 1900. Dr. Gibson, of New York City, will be invited to discuss the making and fitting of artificial appliances for the treatment of cleft palates. The subject of gold inlays, and some features of prosthetic dentistry will be on the programme. An interesting paper will be the one presented on preliminary dental education. The Dental Council's representatives will meet to discuss a Canadian standard. This is our national meeting.

DEGREE IN DENTISTRY.

On January 26th, 1904, a mass meeting of the dental profession of Great Britain and Ireland was held in London, to discuss the advisability of the London University granting a degree in dentistry. One would think at first blush that there would be only one side to the argument so far as the dental profession was concerned, but not so. Out of 222, who voted, 87 opposed a degree in dentistry. The chief argument used against the degree were, first there is no need of a degree; second, it would estrange the dentist from the physician and surgeon; third, it would make class distinctions, those without a degree would be at a disadvantage; fourth, with such high educational ideals, many might be hindered from entering the profession. There seems to be a scarcity of students of dentistry who wish to qualify. We didn't notice the argument that "what was good enough for us is good enough for our sons," as was once used against advances in dentistry in Canada. The multiplication of degrees was also an objection.

THE BOARD OF DIRECTORS OF THE R.C.D.S.

The regular annual meeting of the Board of Directors of the Royal College of Dental Surgeons of Ontario will meet April 25th, 1904, to conduct the regular business of the profession. Generally the DOMINION DENTAL JOURNAL has some suggestions to offer the Board before each annual meeting. In a sense it may be none of The Journal's business what the Board does, but since they both are aiming at the same thing—the betterment of the profession—The Journal sometimes speaks, often right, sometimes perhaps wrong. But this time there does not seem to be anything to say. At a special meeting last October there was a general cleaning up. The new by-laws are all right and go as far as the public and profession are prepared for. Every dentist should read the new by-laws recently sent out. There are changes which affect students in course and those beginning; also changes affecting the election of members to the Board and the unethical practitioner. The Journal is informed that already there are dentists who have, on information being laid, willingly withdrawn objectionable advertisements rather than stand a trial under the new Act. The law is such now that it is rather a hazardous thing to conduct an unethical practice. All The Journal has to say of a Board that does things is amen. Just keep right at it, and everybody will say amen.

TERRITORIAL CLINIC.

On August 4th, a clinic will be held in Calgary, which will be the first of the kind held in the Territories. The arrangements were made at the first meeting of the new Council, February 13th, 1904.

Editorial Notes

The new by-laws of the R.C.D.S. seem to be a great improvement in many respects.

Dr. H. A. Wilson, Wardsville, Ont., sailed from New York in the early part of this month for the Holy Land.

Read an article in this issue on Dental Education as suggested for England.

PRACTICE FOR SALE.

An ever increasing practice for sale in a good residential town of 6,000. Two months introduction, reasons—going abroad.

X. Y. Z.

Dominion Dental Journal.

Dominion
Dental Journal

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Original Communications

THE DENTIST IN THE PUBLIC EYE; OR, WHAT SHOULD THE DENTIST DO TO BRING HIMSELF BEFORE THE PUBLIC AS AN EDUCATED, CULTURED CITIZEN, AND A GENTLEMAN.

BY A. A. SMITH, D.D.S., CORNWALL.

Read before the Ontario Dental Society.

In the preparation of this paper, which was undertaken at the request of Dr. Webster, who was good enough to name the subject, I make no claim to originality.

I have not hesitated to present my ideas, clothed in language which others have used before me, whenever such a course has seemed advisable. Because some one has said a good thing, is no reason, to my mind, why the only words that can adequately express the idea should be regarded as pre-empted, and so, while deeply conscious of having received much assistance, by reason of such appropriations, I am unable to do more than recognize them in this general manner.

In adopting the title, "The Dentist in the Public Eye; or, What should the Dentist do to Bring Himself before the Public as an Educated, Cultured Citizen and a Gentleman," I have used word for word the suggestion of Dr. Webster. The subject is one which in abler hands might be used to splendid advantage, and even I, when shorn of the old, time-worn excuse of not being able to think of a subject to write upon, felt constrained to accept the honor and responsibility of preparing this short paper with the hope that it may form a starting-point for your discussion, wherein the subject stands a much better chance of being fully elaborated.

That the Dentist, as a cultured gentleman, owes certain duties and responsibilities to society cannot be questioned, and as it is impossible to isolate himself from the effects of his personal influence, he should strive to make that influence an inspiration to others.

The only responsibility that a man cannot evade in this life is the one he generally thinks of least—his personal influence. Man's conscious influence—when he is on dress parade, when he is posing to impress those around him—is woefully small. But his unconscious influence—the silent, subtle radiation of his personality, the effect of his words and acts, the trifles he never considers, is tremendous.

Like the forces of Nature—heat, light, electricity and gravitation, this influence works silently and invisibly. We know they exist by seeing the effects they produce. As an educated citizen, the dentist has, in common with those similarly qualified in other walks of life, certain public obligations to the community in which he lives.

Owing to the demands of his profession upon the dentist's time, it may not be compatible with his interests or politic for him to invade the higher walks of public life, but he should not be a nonentity.

He should be a man with some aims and ambitions in life, willing to take his share in providing the ways and means towards a high ideal, instead of taking the narrow-minded view that he was put into this world to take all and give nothing. He should exert an influence as great as he can afford, not grumbling at the organizations in his locality, and those at the head of them, but shouldering the responsibility of citizenship, when duty calls for their performance, even though it may entail some personal sacrifice. And the field is one where the mental calibre, self-respect, self-reliance and unconscious influence of the man has unlimited scope.

Probably no characteristics of the dentist are more necessary, for the inculcation and maintenance of what we may call a proper standing in the public eye, than self-respect and self-reliance.

The one begets the other, and neither are opposed to true humility of heart or modesty of manner.

The self-respecting dentist is not indifferent to the esteem of his fellowmen, but he has no desire to sail under false colors, or produce false impressions. He will never be ashamed of his occupation, knowing that it can neither honor nor dishonor him, but that he can honor it by his fidelity to it.

He should never be boastful or intrusive, nor yet shrinking or servile. He should avoid haughty ostentation or display, not as the result of any difficult or artificial circumspection, but from a cultivated habit of self-poise or balance.

It is this attitude of mind which enables us to fill our places in society or public life, with benefit and pleasure to ourselves and others. It frees us from slavery to externals, and reminds us that, though our means may be more limited than those of others, our expenditures are our own private affairs, and subject to our own judgment alone. It helps a man to hold his own opinions modestly and firmly, while respecting the opinions of others, and careful not to invade their independence.

Apart from the attention which he pays to his practice, and the dollars and cents to be obtained from it, the dentist owes a public duty to his professional brothers at large. Bacon defines the relation of the professional man to his profession or calling as follows:

"I hold every man a debtor to his profession, from the which men of course do seek countenance and profit, so ought they of duty to endeavor themselves, by way of amends, to be a help and ornament thereto."

There is to-day even more urgently than in Bacon's time, a call to the professional man to be to his profession a "help and ornament." His profession gives him a standing in his community. It gives him access to circles otherwise closed against him. It gives him his livelihood.

These and his own character constitute the figure he cuts in the world. In other words, his profession affords the opportunities for his life-work. His character decides how well or ill he will do that work. His profession is, therefore, a part of his equipment. All that other men have done, or are doing within its confines, it makes his.

Is it not clear, then, that he owes it a loyal support and such return as is in him? which last it may be said never can be great enough to discharge the debt.

No man who accepts the dignity, the honors, the emoluments of a profession, has a right to withhold from the common store any thought or achievement which will add to the sum-total of its riches.

Whatsoever in the way of advanced ideas comes to him, must be, if he does his duty, placed at the disposal of his confreres, and this duty is just as binding upon the humblest member as upon the most eminent.

Men are apt to look to their so-called "leaders" for all the progress they make, to accept the dictum, and await the approving nod of authority, before they decide to adopt this or that procedure—to become, to put it plainly, leeches, drawing their sustenance from others, without any return in kind.

Every man should be, to some extent, an investigator. It is a safe proposition that any member of any profession can, by studiously applying himself to any one subject within its purview, add to the general knowledge of that subject, and so prepare himself to discharge in kind a portion of his obligations.

Cornwall, January, 1904.

DISCUSSION BY FRED T. COGHLAN, GUELPH.

In the discussion of this paper I must, first of all, thank Dr. Webster for having placed this subject before the essayist, for it is one, it seems to me, of great importance to the profession.

Dr. Smith has, in a very able, high, and broad-minded way, given us the ideals which we should strive to attain; but, I regret to say, that he has not told us any of the things we might do or say, or avoid saying or doing, to acquire that aim.

In this short paper I can scarcely presume to even enumerate the many things we may do, or may not do, in order that we may receive the respect and honor due us as members of the dental profession.

First of all, we must be equipped with a theoretical and practical knowledge to make us masters of our professional occupation. And this, at least, is possessed by all who are graduates of the Royal College of Dental Surgeons of Ontario.

Then we must conduct ourselves in a professional manner. This embraces everything for the attainment of such ideals as the essayist places before us, and must be treated under separate heads:

Our Office.—Have it compact, plain, and dainty, without being at all fussy, for it seems to me that frills of any kind are not indicative of a manly spirit. Have your operating room and laboratory exclusively separate from your reception room. By this I do not mean that a curtain, or even a thin board partition will suffice, although we too frequently see such. The reason I mention this is that orders and noise in the laboratory should not be noticeable in the reception room, nor should advice given in the operating room be heard outside that room. Have a dressing room if possible, if not, a mirror conveniently placed in the reception room will suffice.

Office Conduct.—Have specified office hours; and every dentist should have an assistant or attendant, preferably a lady, as she will be more congenial to the majority of your patients, and take more interest about the office. She will answer the door, and also show your patients out after they leave the operating room, when the dentist's obligations to him or her should have ceased. Avoid entering into lengthy conversation with patients, as it interferes with your work, and takes up your time, which to the busy dentist is money; and, above all, avoid political or religious arguments. The less you say beyond being courteous and agreeable, the more your patients will think of you. Always be clean and neat about your person; and, above all things, cut out the use of liquor or tobacco, immediately preceding and during office hours. Be particular that your breath is fresh and sweet, and avoid using strong perfumes, if any. It may cost a little more of your earnings to be well and neatly dressed, but no dentist can afford to be otherwise. Make your appointments, and adhere as closely as possible to the hour named. This is often not convenient, but do not keep a patient waiting indefinitely after the hour of his or her appointment. If such be necessary have your attendant explain, and possibly make a new appointment. Never find fault with anything your brother dentist may have done. If you cannot speak favorably of him, do not say anything. He may have shortcomings, so have you. Do not have your office decorated with such cards as "Strictly Cash," "No Credit," etc. This is not professional. If you wish to enforce the cash principle hand your patient a statement of his or her indebtedness before leaving the operating room. They will generally understand what is meant. If not, you can then and there remind them of your principle. By pursuing this method you can then treat people according to their individual desire to pay. This part of a practice is rather important, but patients must be treated in a way becoming to a professional man and a gentleman. Be particular about the collection of your accounts, and have some arrangements with any of your patients with whom you are doubtful as to when and how they can pay. Live up to these arrangements, and they will, as a rule, try to do the same. Exhaust every means in your power in the collection of an account before placing it in the hands of a solicitor, and resort to this last means only with your best judgment. Never lose control of your temper with patients, although, at times, it may seem strongly justifiable that you should. You will be better pleased with yourself in the end, and your patients will respect you more for it.

Outside the Office.—Avoid all extensive display of printer's ink. Have no bargain days. Do not try by this means to make the people think you are any better than your brother dentist. You may be better, but the public will soon find that out for themselves, and will respect you the more for not having told them. Your name, office location and hours, are all that is necessary for your local newspapers. You may have been clever enough to be a gold medallist, or to have obtained the highest honors in your college course, but do not use that as an advertising means to obtain a practice; or, as Dr. Smith has said it, "Avoid haughty ostentation or display." Never allow your name to go on a handbill of any kind. You can use your own judgment about allowing your name to appear in a professional capacity in a church almanac, etc.; but, from my point of view, I think it is not wise to make yourself conspicuous, even in church matters.

Make your patients respect you more on account of your ability as a *dentist,* and your conduct as a *man.*

Guelph, February, 1904.

THE DENTIST IN THE PATIENT'S EYE

By H. E. Eaton, D.D.S., Toronto.

Read before the Ontario Dental Society 1904

One's ideals should always be kept in advance of his attainments. Otherwise, when he has reached an ideal, stagnation and decay result. Of course, he would become a "finished dentist," but in the sense of the word used by a shrewd Yankee who visited a small and exceedingly quiet town in Nova Scotia. After looking it over carefully, he remarked: "Wall, that is my idea of a finished town. There's no more to do." It is a dangerous condition when a man feels that he knows it all.

Starting, then, with my ideal far in advance of my attainments, I shall not fear the criticism, "First cast out the beam out of thine own eye; and then shalt thou see clearly to cast out the mote out of thy brother's eye." I shall, therefore, feel free to offer suggestions and make criticisms.

From its earliest days, the dental profession has been made up largely of two classes. First, those who have seen something more in their vocation than the doing of a specified amount of labor for monetary remuneration, and have given their best energies to elevate the profession. Second, those in the other class who have associated themselves with the profession solely from the motive of gain, caring nothing for the profession as a whole, and very little for the welfare of their patients.

By the latter class, various methods are adopted which are calculated not to benefit the patient, but to increase the dentist's bank account. Some of these methods might be noted as follows: Giving the name "Dental Parlors" to a dental office. Exhibiting large and glaring signs to attract the eye of the passer-by. The using of misleading advertisements, such as the following, which I clipped from a daily paper:

> A PLATE YOU CAN EAT WITH.
>
> Mrs. M. L. Sexton, No. 169 Locust Street, says: "After trying three times to fit my mouth a prominent dentist told me I could never wear artificial teeth; that my ridges were too far gone to hold them in place. A friend advised me to try one of your plates, *and you struck it right the first time.* I can eat anything with them, and they feel and look exactly as my own teeth did twenty years ago. Have worn store teeth for many years, but never had a lower set before that would *stay down on the jaw where it belongs."*

> 30 Days' Trial.
>
> I will make a full set as low as $5.00, but if you want the "*Best that can be made*" call and see my special *Hand Carved Teeth,* which are made for each individual case. These sets are especially adapted for mouths that are difficult to fit with the common rubber plates, and represent the highest art in dentistry. They cost more than the ordinary kind, but the result is incomparable both in appearance and usefulness. I allow thirty days' trial.
>
> *If I cannot suit you perfectly I don't want a cent.*

As the better class of dentists do not appear prominently in public print, the field seems left clear for the other class. They pose as the educators of the public along dental lines, and by many of the public their teachings are considered as the voice of the whole profession.

A summing-up of the instruction thus given would be about as follows :

Scientific research has revealed to us the fact that teeth are a nuisance at best. If you can have them filled without costing you too much, or causing you too much inconvenience, you may do so. But we have discovered ways of disposing of these organs, which make it a real pleasure rather than a source of dread. And as an extra inducement, we offer you an amazingly cheap set of teeth to replace your own. These are infinitely better in every respect than your natural teeth.

Thus the two classes in the profession are contending, the one for the conservation and the other for the destruction of the teeth. The method of the one is somewhat analogous to the practice of sending rum and missionaries to a heathen land in the same ship.

With this sort of teaching coming from a section of the profession, should we be surprised if the public has a rather low estimate of both the dentist and his calling? This is not as it ought to be.

What position should we occupy in relation to our patients? Are we to study our patients' best interests, and advise them accordingly, or are we to ascertain their inclinations, and then cater to them?

For instance, we are sometimes asked to insert artificial dentures over diseased roots, because the patient has not the courage to have them out; to place gold crowns where porcelain should be used on anterior teeth, because the patient likes the appearance of gold; to drill holes, and insert gold fillings in perfect teeth, so as to satisfy the vanity of the patient; or to extract teeth that need not, and should not, be removed. Let us seek the answer as to our proper position in the definition of the word "profession." This is given as follows: A vocation in which a professed knowledge of some department of science or learning is used by its practical application to affairs of others, either in advising, guiding, or teaching them, or in serving their interests or welfare in the practice of an art founded on it.

If we assume the title, we must accept the responsibilities that go with it. Therefore, I conclude that there is a limit beyond which a dentist may not go in yielding to his patient's wishes. There are principles, to violate which is to do wrong; and no man has a right to do what he knows to be absolutely wrong simply because his patient wishes, and is willing to pay for it. Neither is he justified by the argument that if he does not do a certain thing, some other dentist will, so he might as well have the fee as the other man.

The title of profession places us out of the realm of mere commercialism. We are not mere makers and menders of teeth, nor traders in silver and gold.

I once heard of a dentist who, I think, had the right conception of his vocation. His patient complained that he had charged too much for a certain gold filling, remarking that there was only a small amount of gold in it. His polite, but decided, reply was: "I'm not selling gold, madam."

Let me here urge the question: Have we made the definite distinction in our own minds between professionalism and commercialism? How do we impress our patient as he comes to our office in the interests of his teeth? Is he impressed with the idea that we make his interests paramount, or does he see an anxiety in our faces lest we bid too high and lose the job? In other words, is it the financial side of it that concerns us first of all? The patient's real interests should always come first.

Some of our extreme idealists would have us believe that they are so intent upon the patient's welfare that they care not whether they receive a fee or not. I never believe them. If they cannot work up more interest than that, in the fee end of their practice, I should advise the employment of a business manager to keep things straight. But while this extreme position is untenable, your patient has a right to expect from you, in his behalf, the best you possess of professional knowledge and skill. Having rendered this, you have then a perfect right to a reasonable fee for your service. But remember always that efficient service to the patient is of first and paramount importance.

I believe that the great majority of patients feel that satisfactory advice and service is to be the first consideration, rather than the driving of a close bargain.

In conversation with me not long since, a gentleman made the following statement: "When I consult my broker, it is to obtain advice which has to do solely with my pocket-book. But when I consult my dentist, it is to obtain advice and services concerning my teeth, and not my pocket-book, though I expect to pay for the same."

A word to those who practise in small towns. Some of you have told us in convention that a great deal of what has been discussed does not concern you, inasmuch as it is related to work of so high a class that your patients do not want it, nor are they able to pay for it, that you want to know the cheaper methods.

I spent the first five years of my practice in a small town. I encountered the difficulties you speak of, and I learned also that country and village people could, and finally did, appreciate as high-class work as I was capable of doing, and were willing to pay for it when satisfied they were getting it.

I do not mind telling you a secret if my brother practitioners in the city raise no objection. If you take the hint, it may somewhat curtail our practices. I would venture the assertion that there are not half a dozen practitioners in the city of Toronto who do not draw a part of their practice from the surrounding towns. People come to the city and pay city prices. And I will tell you something more. In some instances, they have the idea that dentists practising in small towns do not know their business; and that the ordinary laws of cleanliness and sanitation are not always observed. They may not tell them so, but sometimes they tell us.

I do not for a moment believe that charges of this sort are applicable to the majority of country practitioners, for from my own observation I know of many offices in small places that might serve as patterns for any city offices as regards cleanliness and neatness; but from the frequency of the complaints made, it is to be feared that there are altogether too many offices where certain conditions should be vastly improved.

Among the specific complaints under my notice are the following: Filthy, uncared-for offices, soiled linen, blood-stained spittoons, dirty instruments, and an unkempt dentist to match the surroundings; the general appearance of the dentist and his office speaking in loudest terms of a lack of interest in everything except possibly the earning of the almighty dollar.

Now, if this be true in any general sense, why should it be in the small town any more than in the larger one? Is the obligation any less on the dentist in the village or country place than on the one who has the best practice in the city? Some one may say, Yes, because the city practitioner has more competition, and therefore is obliged to keep himself and his office up to a high standard.

Well, if competition is the only stimulus that keeps a dentist and his rooms tidy, my sympathies are with his patients.

Now, how do people get these impressions of certain dentists in the smaller places? My theory regarding it is this: When a dentist makes up his mind that his patients are only able or willing to pay for cheap, inferior work, he is in great danger of becoming indifferent, falling into careless habits, and saying to himself what I have often heard remarked, "I don't get paid for good work, therefore I'll just give the service I'm paid for." It comes to this: A dentist's estimate of himself and the service he renders, determines largely the estimate placed upon him by his patients.

This, of course, does not justify bumptiousness. But if we belittle our operations either in the matter of importance or price, we certainly cannot expect our patients to value them very highly. Perhaps at no time has the patient a greater opportunity of "sizing up" the dentist than while sitting in the chair during an operation. Mental notes are being made on these occasions, for the patient has little else to do. I might mention some I have heard given expression to, viz.:

"He leaned heavily upon me while he worked."

"His breath was offensive, and he persisted in breathing into my face."

"He threw his waste cottons on the floor."

"He kept so many instruments on his bracket table that I was never sure whether they were cleansed after the last patient or not."

To make the most favorable impression upon his patients, the dentist should know more than the details of the operation; he should be able to converse upon subjects that will interest his patients. To do this, great discretion must be used in the choice of subjects suited to different individuals. It must be kept in mind that the boring of the patient can be made as painful through the medium of conversation as with the drill.

I once heard of a gentleman who was always bored by the conversation of his barber. One day, as he took the chair, he handed the man a quarter. The barber looked surprised and asked: "Why do you pay before the work is done?" "Oh," said the gentleman, "that is hush-money." Possibly, with dentists too, there are times when the less said the better. With all the shortcomings, imperfections and indiscretions that may be apparent in the dentist, the fact that the profession has made such marvellous advance along all lines of improvement, in the last score of years, must command the admiration and respect of the thinking public.

DISCUSSION ON DR. EATON'S AND DR. SMITH'S PAPERS.

Dr. Musgrove.—In speaking on the subject I will for a few moments view our profession from the standpoint of a disinterested party. Dentistry is, of course, subject to the criticism of the public. Our patients are part of that public, and it is our duty to make a correct impression on them. I regret very much that we have the quack in our province. Once they were all right, but they have fallen away. Dr. Willmott has done his duty. Regarding competition, I really think it is a good thing. It makes a man stricter in his business. In Niagara Falls the dental profession has a different standing to what it has in a great many other towns. We are near the border, and a great many quacks from the United States are there. People have a tendency to look upon the dental office as they do a departmental store. Dentists should be a most representative body of men, though they are not so at present. I will not discuss the paper further.

A. W. Thornton.—It would be a great pity if these papers were allowed to go by without a lively discussion following them. I had hoped that Dr. Smith in his paper would not have treated the circumstances in quite such a broad sense, but would treat the subject more specifically. Now I know that we cannot expect a man who is kept very busy attending to his practice to keep running after other things, yet I strongly believe that we should have our profession more fully represented in civil affairs. I have not known Dr. Smith personally, but have heard that Dr. Smith in his town takes considerable interest in the militia. I understand that he gives lectures along his own professional line, and it seems to me that nothing better could be done by some other members of our profession. In regard to politics, I do not think that any man ever lost a dollar by associating himself with whatever party his reasoning dictates. In regard to what some one has said about dentists entering the political arena, I think that now is the most profitable time, and here I must say that I think that what Dr. Willmott proposed some time ago when he said that he "was willing to subscribe ten dollars to the election fund of any man in the profession who would offer himself for a candidate for political honors, and he did not care which side he happened to be on," has my most hearty approval. Now again in regard to church work. Whilst I have nothing but contempt for a man who tries to work a church, yet I feel sure no man here will say that we ought to refrain from such high work because we are afraid of being accredited with doing that. Dr. Johnston has been quoted by Dr. Smith, and in the same book Dr. Johnston strongly asserts his ideas of church work, advising strict attention, saying that to be a good dentist a man must be a good Christian. A man should not allow himself to be deterred from working for his church, but let us be something more than mere tooth-fillers, and show the public at large that we are worthy of the highest possible attainments.

Dr. Cross—*Mr. President:* So much has been said of Dr. Smith's standing in the public eye, that I feel like saying something in endorsation of it all. It was my good fortune some years ago to be a fellow-townsman of Dr. Smith, and he and his brother dentists lived as dentists should. They got good fees. It is the only town I have ever been in where they get sixteen to eighteen dollars for vulcanite plates. Of course, men of lower professional ideals may have since invaded the town and reduced the fees, but I am speaking of then. They did not live in their offices—went fishing and shooting. Closed up at 5 p.m., and you never heard of any of those three gentlemen boast of working all evening after hours, etc. Often at 3 p.m. even Dr. Smith could be seen going off to the rifle butts to practise, and that is how he has been able to rank among the crack shots of the Empire. Not only that, but he, with a dozen other young men, took time to practise and play lacrosse, and became so proficient at the national game that they landed the championship of Canada and the world, and "Bud Smith" was the star fielder of that team. Now, that only bears out what Dr. Mitchell has said. These positions cannot be obtained without money. If dentists have to work day and night for money enough to subsist, they have no time to develop any qualities of good citizenship or take a reputable stand in the eye of the public. Another matter to which I would ask to draw your attention. Several words are erroneously used in our language. It is bad enough in speaking, but when writing articles in a dental journal do not use English that puts you on record as a careless writer. Now, I don't stand before you as a paragon of pure English. You all know as well or better than I that it is wrong to say "more perfect," "most perfect." I had a list in my mind, but they have left me. I cannot think well on my feet, though I am a great thinker sitting down. (Cries of "Sit down.") If I sit down that will not dispose of me, for "Truth crushed to earth will rise again." If a thing is perfect it is perfect. It grates harshly upon my tympanum to hear "more perfect," "more complete," etc. Also, if a thing is square, it is square; if round, it is round, no more or less. These are not relative terms, and you all knew this before you passed your entrance exams. I don't claim to have any finer senses than any of you, and these certainly grate upon us all; so let us be more careful. And further, I say, for goodness sake don't speak of filling "inaccessible" cavities, as even a prominent editor sometimes has.

Dr. Mitchell.—I consider the papers we have just heard, and the topic one of the most important to be discussed. Dr. Smith has treated the subject very generally, Dr. Eaton more specifically. Dr. Smith is one of the best men that the Society could select to treat with this subject. I have known him, and known him to be one of the best athletes in Canada. He is a good man, a military man, and a crack shot. Now there are some of the lines in which a dentist can prove that he can step outside his profession and prove that he can be a manly man. We are citizens and dentists playing the game of life under a strict referee, and that is public opinion, and the man our referee sends to the fence for a foul suffers a greater degradation than any athlete. My advice, is, let a man stand out and take part in the municipal affairs of the town or city in which he is living, and I think that a man is missing the best part of his life if he does not take part in some of these institutions. One cause of the lack of this is the want of time, or rather an apparent lack of time. We should take enough time from our routine of work to do other matters which are not professional. We must not let ourselves become narrow-minded. Of course another cause is our low fees which make this lack of time. I trust that the papers we have heard to-day will inculcate higher and nobler aspirations in the minds of the dentists of Ontario. I understand that we have a higher class of men in the Ontario Dental Society than any other province in Canada.

Dr. Hamill.—From what I have heard of the discussion it appears to me that our ardent dentists claim to have not time enough to engage in municipal matters of any kind. I do not rise to say anything in my own favor because I am engaged in these duties, and I have the honor to represent the town from which I come as mayor for the past eight years by acclamation. I am an active member of the Masonic fraternity, and I have also my magisterial duties to attend to. Probably no hour in the day do I not have to leave my patient and enter into conversation with some one about complaints or something of the sort. I speak of the duties I have to perform, yet I like them all too well that I do not know what I shall do when I get out of these positions. I guess I'll have to join a football or lacrosse club.

Dr. Smith.—I have first of all to thank you for the reception you have given my paper, and especially for the discussion which has enlarged so much upon it. Possibly I ought to correct an impression which seems to have been taken from my paper as to my idea in regard to taking part in politics. I think the reading of one paragraph in my paper will correct this impression. (Quotes paper.) Now far from saying we ought not to take part in politics, the idea I meant to bring out was that we should, if time permitted. I think it would be much better if we had some more members of our profession occupying seats in the Legislative Assembly. Some mention was made in a circular sent out by the society concerning my connection with the Canadian Army Dental Corps. I had been asked to speak on the matter. The Executive Committee is supposed to make its report to the Canadian Dental Association. I think that any remarks before this meeting would not be quite in order. But whilst I have no desire to anticipate the secretary's report, I will have no hesitation in speaking to any person privately, and I will say here that I believe that before the end of the coming session of parliament provision will have been made for a Canadian Army Dental Corps, and that when it does come into existence that we will stand on an equal footing with the Army Medical Corps. I was pleased to hear of Dr. Hamill and his offices, which I think are some of those a dentist should occupy. (Refers to Dr. Johnson's book.) I think that the obligations of citizenship entail none the less to dentists than to any other man in other walks of life. He can enter politics or municipal councils as well.

Dr. Eaton.—*Mr. President,* I have not much to add in closing. I want to modify the idea they have taken of certain points. If you will note the statements made regarding practitioners in country towns, you will find that they were not directed to the majority, and in my mind they would include a very small minority; but the retaliation against the city practitioners is just what I wanted brought out. I may say in reference to the treatment of the subject, that I took it up in this definite manner rather than dealing with it in a more general way lest I should be treading upon Dr. Smith's toes. The drawback in presenting a paper of this sort is that the persons whom we wish to get at are not at the convention. The very fact that the gentlemen present from towns all over the province have left their homes and with great difficulty, owing to the condition of the railroads, have made their way to Toronto to attend this convention, shows pretty clearly that they have a right conception of their vocation.

Dr. Cross.—We accept the apology of Dr. Eaton. The country dentist, in my estimation., is looked up to much more than the city man. For we never see the city man up for municipal offices. We never see his name figuring in the papers.

Dr. Patton, of Germany (introduced by Dr. W. E. Willmott)—I have had no opportunity of looking over the paper of my predecessor. My remarks will differ from those of preceding speakers who have dealt with the dental practice. I desire to make a few remarks on the standing of the dentist in Germany. I refer to the social standing and how his profession is regarded. This is a large contract when we consider the different educational systems of England, France and Germany. I might perhaps interest you a little as to how the dentist is looked upon. In the three countries the American dentist has a high standing on account of the character of the men who practise there. Dentistry up to to-day is very far behind this country and the United States. Dentists from America hearing of the advantages to be gained on the other side were not disappointed on going. They found that the people had the greatest respect for them and the American dentist generally. The educational system was largely responsible for this. These men were men of the characters alluded to in the papers to-day. I remember my first appearance in Germany. In Berlin I inquired who was the leading dentist, and found he was Dr. Frank Abbott. He was a successful dentist, indeed, and a thorough gentleman. His office and parlors were the reception rooms of the American tourists at the time. In Dresden, Dr. Jenkins was the same character of a man. I might say that in almost every city in Europe it was the same, the leading dentist came from this side. These statements will prove to you the ethical character of our profession. Coming more closely to the social standing, the dentist has the prestige of an American graduate. I might say that society is open to him as to the medical man in this country. This standing was gained through the character of the men who went there and practised and gained the confidence of their patients. In comparison to this it is interesting to know that the "Tooth Doctor" is not looked upon the same as the American. In England and France it is about the same. Now that their system has improved, the character of the men who practise dentistry has greatly improved. Success can only be attained by men of such character as have been described in the papers presented by the gentlemen this afternoon.

PLASTER IMPRESSIONS FOR ORTHODONTIA.

By G. A. Roberts. D.D.S., Toronto.

Clinic at Ontario Dental Society, 1904.

As the taking of an impression in plaster for orthodontia is considered unnecessary by the large majority of dentists, it will be my aim in this short paper to show that such a theory is unworthy of men of science.

We think ourselves scientific dentists, *i.e.,* dentists who work on, and strive to produce "certain knowledge." Do we always, even when we can, try to work scientifically? I think we do in nearly every other department of dentistry, but in our treatment of cases of malocclusion I certainly think we do not. How many of us have accurate models taken before and after operating, made from plaster impressions which have been allowed to set hard in the mouth before removal? How many have photographs of all their cases full front and profile views taken before, immediately after, and two or three years later? Up to the present we have had very little accurate scientific data from which to draw facts. I do not think it is hard to tell why we have treated this subject superficially. It is a subject which requires very close study and unlimited thought and time, and a knowledge of normal conditions which many of us honestly do not possess. It is my opinion, gentlemen, that until this science is made a special study and a special practice, we cannot make the progress towards the "scientific," *i.e.*, the positive knowledge of this subject, that we have in other departments of our profession. But we should all work as accurately as we can, and we most certainly do not do so when we use study models made from compound impressions. We make models for the purpose of study, and some, I hope a very few, use them in constructing their appliances. It is a pleasure, and an inspiration to quietly sit down alone with what you know to be absolutely perfect models of your patient's mouth artistically carved, and two photographs of the face before you. Do you not think that the results of the study will be more scientific than if you simply had before you a rough model more or less distorted of the crowns of the teeth? Some models were referred to me a few days ago, that were made from compound impressions representing the crowns of the six anterior teeth only. To succeed in orthodontia, we must have every tooth in both arches, all the alveolar process, and every root if possible. We cannot accurately study the cause, the treatment, the retention, and the progress from day to day, from month to month, with what are at best but faulty models, and all are faulty that are not taken with plaster-of-Paris. How can we add to the knowledge of the subject with inaccurate, and very often entirely misleading, models, and published pictures of them? A study model should have sharp cusps and enamelled ridges; it should show the correct inclination of teeth and roots and their correct length. They should

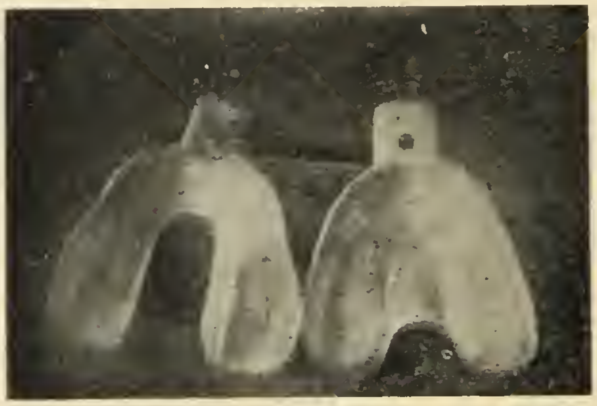

Fig. 1

show the alveolus over the crowns, so that we may know what change takes place in that region not only immediately after, but several years later. A compound impression will not show any of these accurately, and in the majority of cases they will give a false idea of conditions—teeth that are inclined being represented as more or less straight, cusps, inclines and ridges imperfect, and length of teeth frequently increased by the drawing of the material, roots very rarely thought of, and in most cases not shown in the model. As to an accurate scientific record of changes in that plastic tissue, the alveolus, it is entirely wanting.

A perfect impression has never been taken with compound, and never can be, because of the forms of the teeth, their inclinations, and the interstices between them. (Form of tray to use, see Fig. 1.)

In taking an impression, I always use French's impression plaster, with water barely warm, and no salt. Mix it a little thicker than thin, and in filling the lower tray, place plenty of plaster in the lingual sides and on the anterior portion, with a liberal surplus on the handles, leaving the buccal sides clear. (See Fig. 2.) In the upper put the plaster on the buccal and anterior portions only, leaving the palate free, and, as on the lower, put plenty on the handle of the tray. I prefer to take the lower first, because as a rule it is less uncomfortable to the patient, and when the time comes to take the upper, it is not so unpleasant. I find children from seven to fourteen the best patients, but as a rule there is little trouble, and I have never heard any more complaint about plaster than I heard when using compound. Drawing the cheek outwards, with a mouth mirror, place the soft plaster down where the cheek and process join, using a flexible bone paper knife for the purpose, filling in pretty well from

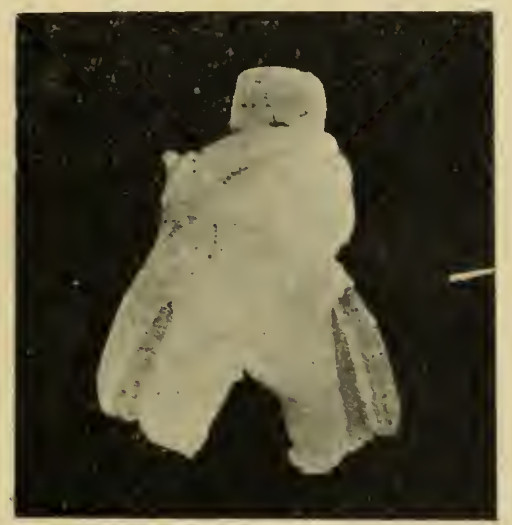

FIG. 2

heel to heel. Now quickly insert the tray, and press down slightly, then work the surplus on the tray handle down in front and as far back as possible, and directing the patient to raise the tongue, press the tray home; allow the tongue to fall back to its place, and while holding the tray with the fingers of one hand, press the plaster down as far as it will go on the outside, right back to the ramus, with the forefinger of the other hand using the surplus plaster from the lingual side of the tray, or wherever it can be spared. If there is a tendency to gag, tell the patient to hawk, and by so doing drive the soft plaster forward and away from the soft palate. Now wait till the plaster sets a little, then wash off your hands. Now begin to fill in the time till the plaster is firmly set by wiping out crumbs and fragments, and a little later scaling off the pieces on the tray. If any of these show an impression of the junction of the cheek or tongue and process, be sure to preserve them. When the tray is clear, and the plaster hard and brittle, it may be easily removed by taking a firm grip of the handle, and bending it backwards. A most important part of the lower impression to be preserved is the piece between the wings of the tray just behind the anterior teeth. This may often be removed before taking out the tray, or it may come out with it. Now, cut two vertical grooves opposite the cuspid teeth, then wipe out every particle of loose plaster, and from this time on save all fragments and place them on a piece of blotting paper. The grooves should not be cut

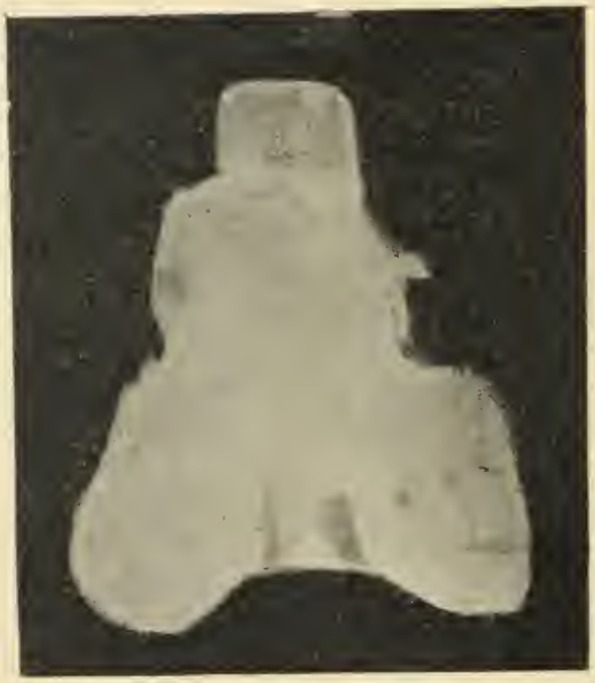

FIG. 3

quite through, yet be deep enough to give a firm grip to the heavy blade used to pry off (the section extending between the cuspids). If there are any pieces left in the interstices, carefully pry them out with your pliers, and lay them opposite their original positions. Next, placing the forefinger on the lowest point of the impression, at the bottom of the cuspid groove press upwards, backwards and outwards to break off the side sections. The lingual portions require a little patience, but can usually be broken in the middle, and removed in two or more pieces without cutting a groove back of the incisors.

Try to get the lower out in five, and the upper in four, pieces, but if they come out in twenty pieces, do not lose one of them. I took out a lower in thirty-four, and an upper in eighteen, pieces recently, and succeeded in getting them together afterward. The upper is treated similarly, and is usually much less difficult. It is not easy to work the plaster upon the sides after the tray is in the mouth, but by placing a generous quantity in before inserting the cup (see Fig. 3) and filling the latter well up on the sides, you may be certain of getting a perfect impression of both hard and soft tissues. The trays which were devised by Dr. Angle are made by the S. S. White Co. They are thin, easily bent, and very deep. They should be kept brightly polished to facilitate their removal.

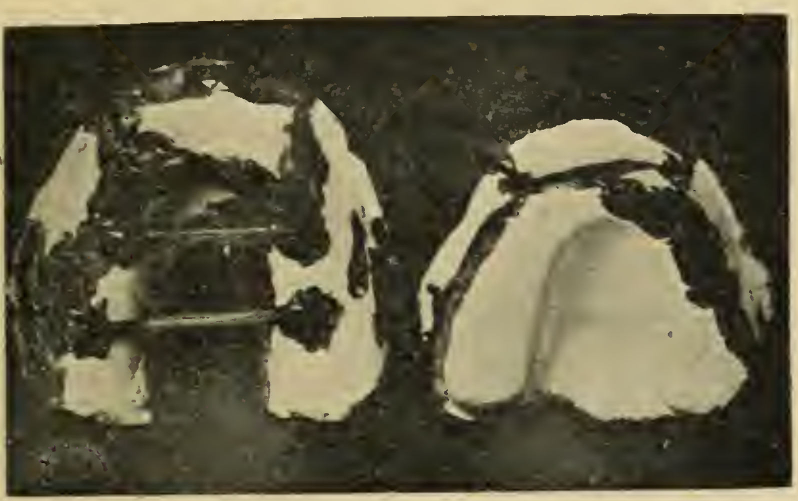

FIG. 4

Assembling the parts is the next step, and in this you need a room to yourself, plenty of time, and a good stock of patience. Never try to put them together in the tray, as that is more or less sprung in removing it. Put the back pieces together first, then follow with the front. Use either sticks of sticky wax or ordinary baseplate, and, where necessary, reinforce with splints of wood or match-ends. (See Fig. 4.)

Have your shellac varnish thin, and apply a liberal first coat all over. The second coat should be very lightly applied, avoiding the stippled surfaces over the anterior teeth. A third very thin coating of thin sandarac over the entire surface should then be given, allowing a half-an-hour between each coat.

I neglected to say that an impression should not be assembled for at least twelve hours after removal from the mouth, giving it time to dry out, and the model should not be separated for at least the same length of time after pouring.

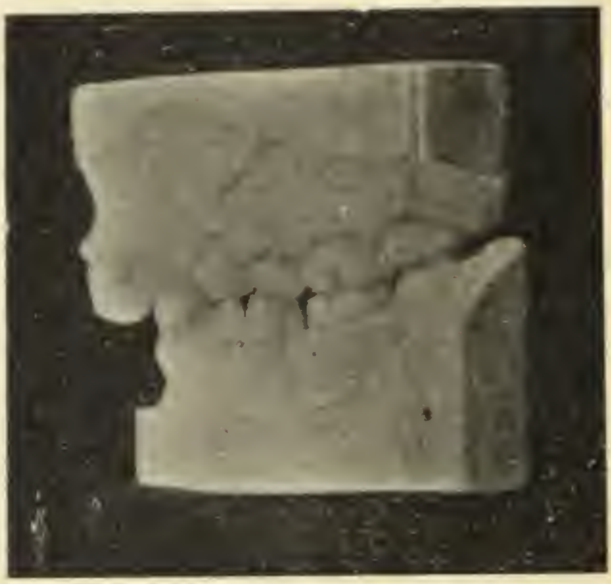

Fig. 5

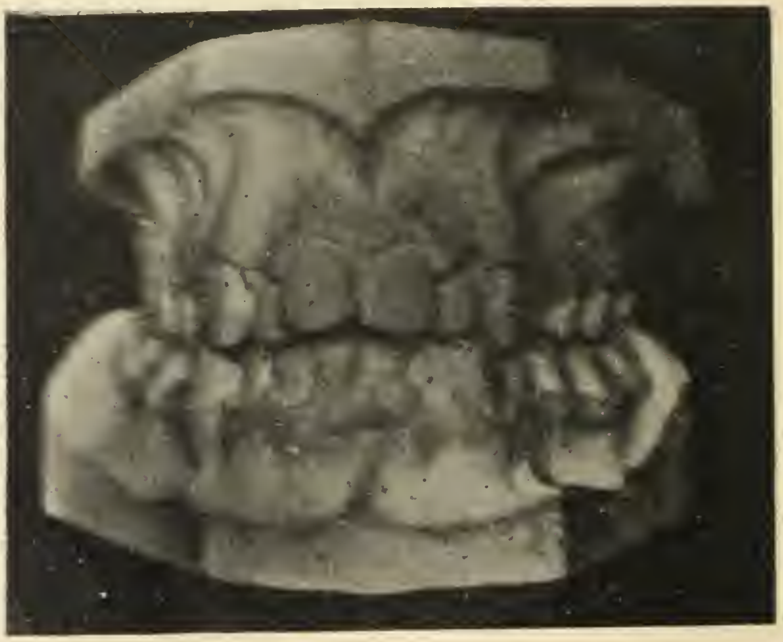

Fig. 6

Now, I propose to show you a few accurate models over which a good many hours have been spent, but which will amply repay the maker in the inspiration they give him to care and accuracy in the treatment of cases. (See Figs. 5 and 6.)

A METHOD OF TAKING A BITE.

By William Revell, Windsor.

Clinic before the Ontario Dental Society, 1904.

Take beeswax and slice it into water hot enough to soften it to a consistency a little firmer than for taking an impression. Mould this softened wax somewhat to the shape of an impression tray bowl proportionate in width, length, and depth, to the space in the mouth so as to fill it pretty well, taking care to have the heels extend far enough back to include all back teeth. Having thus shaped the wax for the bite, place the patient in an easy, natural position, face straight to the front and head slightly back. Place the wax well back in the patient's mouth, on his tongue, and ask him to close his mouth slowly; at this time observe the form of the face so as to judge when the mouth is closed enough, and when it is, ask the patient to hold steady for a couple of minutes to let the wax harden; a side view of the face during this time gives one a good idea as to the correctness of the bite. It is well also to mould the wax down now over the lower teeth to the gum-margin if they are not already covered, because it is desirable to have the lower teeth show on the model to be a guide in setting up the upper ones.

As soon as the wax is hard enough to resist the pressure to which it is likely to be subjected in removal, lift the patient's lip and catch a finger end against each side of the wax, then ask him to open his mouth; this withdraws the teeth from the wax. Now ask him to put the wax out of his mouth with his tongue; this relaxes the lips and prevents crushing the bite.

It is advisable to place the bite in cold water, to avoid alteration of shape while cooling.

Having obtained an impression of the lower teeth in this way and their relative position as regards the upper arch, the next step is to get their correct distance from that arch and also the distance which the artificial teeth should extend down over them. This is done by asking the patient to close the lips, then placing the eye on a level with the lower teeth and gently separating the lips with the fingers; one can then note the distance from edge of incisors to gum above, mark this on a matchstick which records the extent of separation. To get the length of overbite, place the matchstick against the gum and mark the length of the lip on it; this is usually one-sixteenth of an inch longer than the distance of separation.

Observe the median line of the face and note its relation to the lower teeth. As a further proof of the bite observe the relative position of the teeth to the upper gum.

When placing the bite on the plaster model, remove a section of the top to let it fit down on the ridge.

In a partial bite, remove enough wax to allow the ends of the teeth on the plaster model to be seen, to be down in correct position.

Fix the distance screw and lock it before separating the articulator.

THINGS ABOUT BEGINNING A DENTAL PRACTICE.

By A. E. Webster, M.D., D.D.S., Toronto.

Read before the Royal Dental Society, March 18th, 1904.

A man succeeds in proportion to his fitness for the position he attempts to occupy. We have chosen dentistry and will succeed in so far as we are fitted for it. Let us hope that as many of us as possible are well fitted for our positions.

It may not be amiss to mention a few qualifications for the practice of dentistry. An inherent aptitude for mechanics; an agile, deft muscular and nervous development; slender and well formed body; small graceful hands and fingers; perfect vision; keen sense of form and color; the presence of the artistic sense; keen observation of phenomena; a mind for detail; good judgment, and a broad, willing-to-be-convinced scientific view of things. Ethically he should have honest views of himself, and his relation to others. Be large enough in mind to desire to succeed in life by leading all others rather than by throwing them down. Have that inborn ethical spirit which will be capable of making a distinction between a trade and a profession? The difference between the two, the ethical and non-ethical is not gauged by the size of signs decorating the office any more than the difference between the cultured and non-cultured is gauged by the number of books read or the information gathered, but is an attitude of mind, an accessibility to the best things and the most refining sentiments. If any of these physical or mental characteristics are absent or incapable of development we are in proportion handicapped. Muscular and ethical training must be commenced early in life. Mental training may be begun even late in life, but no person can after thirty years of age succeed in so training his fingers that he will make a good dentist, nor after that age can he be trained from a coarse, crude bore to a refined, cultured gentleman, even though his inheritance be ever so good. Then, gentlemen, let us thank God that we were taught ethics by choosing ethical parents, and by associating up to the present time with free, liberal minded, honest people who had a care for our feelings and by having such, taught us to have a care for those of others, and that we have begun the practice of dentistry before we reached muscular senility.

Now, gentlemen, we assume that you possess all these qualifications, or you would not have chosen to practise dentistry. So let us consider where these attainments will bring the greatest happiness. In a city, town or village perhaps in Ontario, the great North-West, or a foreign country, but wherever it may be happiness is what you seek. Do not be beguiled into the idea that as soon as you get that which you now seek you will be happy. True happiness is only acquired by satisfying ambition. The man without ambition can have only a slothful happiness, no matter where he practises. So choose a location in accordance with your breeding, culture, education, professional attainments and ambitions. It would be very unwise for the young man just from the farm, trained in the village school and country dental office to begin practice in a residential portion of a large city. It would be equally unwise for a young man from the city, trained in city schools and city office to begin practice in a country village. Each would be lonesome for both friends and practice. Have such a knowledge of yourselves that you will know the place you are at present fitted for. If you don't know anything about dentistry begin practice in a large city, there are more ignorant people there than in the country, and your patients are not so likely to meet each other. Don't begin practice in any place just because you happen to have two or three relatives living there; be courageous enough to go anywhere you think you will succeed. Don't be persuaded to go here or there to practise just because your sweetheart lives here or there, or wants to live in this town or that city. If she will ever be any good to you as a wife she will be anxious to live wherever you will succeed. Any other motives are selfish; so turn her down. Don't begin practice under the shadow of anybody's wing. Be man enough to go and find the place you think you will succeed and begin there.

If you are ambitious to practise in a large city among the cultured classes, and you recognize that you have not the money, the culture and the professional attainments necessary, set about to prepare yourself for such a practice. Go to a town where you will have an opportunity of rubbing against its best people, be wide awake enough to notice what style of clothes people wear, how they eat at table, what books they read, how they act at afternoon teas, weddings, churches, Sunday school, prayer meeting, euchre parties, private dances, balls, assemblies, garden parties, picnics, excursions, lacrosse games, prize fights on a gridiron or a sheet of ice. Study these people wherever you can find them, for among them will you find many of the tender sex, both male and female, who will help you in practice. There is another class of citizen to watch and to learn from. Have a live interest in the political questions of the day. Get among the men who run the policy of the country, the county, the town, the educational institutions, the churches, the sports and the business of the town. Study these men, note what motives govern their actions. Never turn a deaf ear to gossip, always shun slander, never repeat either; encourage others to talk, but don't commit yourself to anything unless you know you are right, because a wrong committed in ignorance casts a greater slur on the culprit than a wrong committed intentionally. Learn all you can about every industry in town; who runs them, where they sell their wares, what they cost, what the profits are, who gets them, where the people spend their money. In fact have both eyes and both ears open all the time for everything within reach. Find out what people do and what they think about things. Let your chief aim be to study the character of people. Note what they enjoy, and what they dislike, and the motives behind actions. General conclusions on these points can only be arrived at by the study of a great number of people under a great variety of circumstances. Your success and happiness in life will depend more upon what you know of human characteristics than upon your ability to put in good gold fillings. Have such a wide knowledge of human tendencies that you can never be surprised or deceived. The only reason why one man can outwit another is because he knows human character so well and can come to a good judgment on the surrounding conditions that he first foresees what will occur. Pope says: "The only study is the study of man." Never meet anyone that you do not try to get some good out of for yourself. Study everybody, study everything, all for the purpose of coming to correct judgments on conditions as they arise. Though you live in a small town never miss an opportunity to visit cities; travel as much as you can afford; extend your acquaintance among every class, and particularly among those whom you later expect to meet. Get acquainted with dentists, get all you can out of them; try to give them something, and thus find out if you know what you are trying to explain or demonstrate. Read a few dental journals well; learn dental happenings. Write articles for yourself first, then try them on the public. Join with any movement which will tend to better the social or physical condition of the public. Take post-graduate work in dentistry. Study the latest methods of practice. Treat every patient as if she were a queen. Just so soon as you think you have equipped yourself for a cultured practice, or have learned all that will be useful in such a practice from your town experience, pull up stakes and go to the city of your choice, and get an introduction by buying a practice or a partnership. Establish yourself, believing that you can live without much practice for at least two years. Four years is the limit of time for a young man to remain in a town if he ever intends to practise in a city; two years should be the limit in an older man.

Another plan for an ambitious man not yet properly equipped for a city practice is to obtain a position on salary in an office in a city which has its clientele among the cultured. The difficulty is such a position is not often open, and though a person may have the ambition, the brains and the ability to work, yet he cannot attain either social or professional position as rapidly by staying in the same place as if he moved.

Should a young man begin practice as an assistant on salary, buy a partnership, buy a practice, including some old furniture, or start out independently? Start at his old home or some other town? A boyish young man, lacking in experience, does well to begin as an assistant for a year or so, but no longer, because there is always the tendency among such to continue on salary for years, and become hired men from one office to another. A partnership in dentistry ought to be very satisfactory from many points of view, but I advise you to go carefully. There is nothing that can be more unsatisfactory except perhaps "a brawling wife." If a young man has the money and other conditions favorable it is often a good investment to buy the good will of a practice, even buy the old furniture. But in the transfer always stipulate that the retiring dentist gives you at least three months' introduction, and agrees under bonds never to return to practise in the town. A practice in a large town or city is of little value to a purchaser unless accompanied by a long introduction. To begin independently is usually the better way, because then there are no old furnishings too good to throw away and yet not good enough to keep. There are no unsavory recollections of "the man who kept there." In general do not begin practice at home, but there are notable exceptions. If a young man's family and social connections at home have always been among the best people there is an opportunity for him to gain by virtue of his family's position. The people are in the habit of looking up to his family, and they will be glad to honor the son. But if a young man is ambitious he will get out from among such and make a reputation for himself, and not trade on the family name. If a young man's only qualification is his family name, his popularity will be short lived. The harum-scarum, red-headed boy who used to steal apples and throw mud at the preacher is always remembered as such, and will not be given the dignity and professional standing his abilities demand among those who used to know him.

Having chosen a location the next difficulty is to choose an office. In villages, small towns and large cities the rule is to have offices in the business portion of the community, while in small cities and large towns offices are mostly located in private houses. In very large cities there seems to be good reason for locating offices in down-town districts, but there is not such reason for doing so in small towns unless it be that rent is so cheap over stores that there is no inducement to go to less convenient private houses. There is no good reason why a dental office could not be better located on a side street in a private house in a town or village, except that the dentist is then always on call, and may be frequently annoyed by callers at unusual hours, which is so much the habit of country people. Another objection to private house practice is the difficulty of getting out for a walk every day. But wherever the location of the office a few things must be considered. Convenience of office to largest number of patients. In cities intersecting street car lines, a central business district. In towns near postoffice or market place, or shopping district. Avoid smoky, dirty or noisy districts; keep away from bad odors—as soap factories, tanneries, glue factories, fish stores, butcher shops, hotels, liquor stores, foundries, vacant buildings. Get among live people, a clean neighborhood, office buildings, over drug stores, banks, dry goods or grocery stores, tailor shop. Neighbor with physicians, lawyers, insurance men, etc.

The entrance to an office should be clean, bright, no odors; if staircase, it should be broad and well lighted; no difficulty in finding the door of the office. This brings me to the consideration of office rooms. Office rooms are rarely built for the purpose, and even when they are they are often not well suited. The old idea of three large rooms has passed. Five small well lighted rooms are much to be preferred. Heat, light, gas, water and electricity, must all enter into the arrangement of the rooms; steam heat is preferable and if there is any danger of too little have control of the heating. Never choose a west light, avoid a north light; don't object to east or south, but choose a southeast. Direct sunlight in an operating room or laboratory is health-giving, but very annoying if coming in from low down, as it does from the west in the summer afternoon, when there is most operating to do. There should be an abundant supply of water and gas. Rooms should be arranged having in view the least expensive plumbing and the greatest safeguard against freezing and choking up. With the above points in view the space at hand should be divided into rooms: reception room, two operating rooms, laboratory and private rooms, and, if possible, a toilet room. The rooms should not be large. The reception room should be convenient to the entrance of the operating rooms, and in a cheerful, bright position; square, and not too large, 10 by 12 is plenty large enough. In the furnishing of a reception room there are two ideas which seem to have prominence, to furnish as a house parlor, or as an office waiting room. My notion is that the more the room looks like a convenient, comfortable place to spend a few minutes the better. Not too much furniture or bric-a-brac; everything plain and no trumpery, a good picture or two, hardwood floor and rug, table, long seat, one low, comfortable chair, the other chairs high and straight backed, wall and window decorations, and in fact the whole room having a design.

The operating rooms must open into reception room and laboratory; the private room conveniently off each. The operating room should be so small that there will be little room for friends of patients to come in, 7 by 8 feet is plenty large enough. One large window is perhaps best, high, reaching almost to the ceiling. The light near the floor is of no use; a projecting window with overhead light is all right, but is hard to heat. Avoid light reflections from the room walls or from walls of other buildings. There should be subdued colors on the walls.

The wash basin may be in the operating room or may be just as well in the laboratory just behind the chair. The actual operating equipment should not be gotten up with the idea of awing the patient at its splendor or completeness. Small, neat, unostentatious chair; cabinet compact, plain, well finished wood; no flashy mirrors and silver mountings, bracket and simple table; cuspidor, plain, as little mountings and show as possible. Gas outfit that can be put in a drawer, so it is never seen except when needed. Those great suspended engines and the like look too much like a derrick or a crane for hoisting stone, for a dental office. Electric engines are all right but they will have to be made with less idea of show. Patients go into an operating room with more comfort and come away with infinitely more respect for dentists and dentistry if they have not been dazzled with silver plate and mirrors, and the appearance of a machine shop. Most people have an idea, and it is a correct one, that if their tissues are to be cut that it will be done more carefully and feelingly if done by hand rather than by machinery. Avoid show in office equipment, it is as vulgar as in ladies' apparel.

This paper is now too long, so let me close by saying a few words on signs, cards, stationary and records. Signs are for two purposes, to attract those who are not looking for you and to point out your office to those who are looking for you. The services of a professional man are usually called for because they are needed. Patients are not attracted to take something they don't need, as at a bargain counter, or a dime show at a fall fair. It is not honest to take money from people for things they are better without, and would not buy unless attracted, hence the incorrect principle of the large, attractive sign. The simple door-plate with your name on it is all that is necessary for those who are looking for you, others don't want you. Remember, sign-makers want to make the largest signs possible. There is nothing makes the dentist look like the shopper or manufacturer more than the large illustrated sign, either on his premises or in the press. A statement of name, address and occupation is all that is necessary in the local paper, if you propose to spend such money. Cut out the business cards all together; every grafter is at it.

In selecting paper and type for letters, envelopes and monthly statements keep before your mind that you are not advertising, but having these printed for convenience to yourself, and those with whom you have dealings. Letter paper for correspondence with patients looks well to be folded once across to enter the envelope; business paper should have name and address only. I have seen on such paper, and on signs, "Dr. J. Smith, D.D.S., L.D.S., dentist, enterence on Mill Street." J. Smith, D.D.S., is enough, or Dr. Smith. Select a neat type; no great black blocks and splashes of ink. Monthly statements should be models of propriety; name and address, occupation, space for the date, and "To professional services." Do not issue itemized accounts. Leave that to the grocer or blacksmith. Send out statements every month, and never neglect to collect.

It must be assumed that it is desirable to keep records of work done and dealings with patients. The card system seems to have a number of adherents, while others prefer books like Allport or Warren. A cash book is indispensable ; always base the amount of your practice on the cash received and not on the amount written in the register or day book. For a full discussion of the business relation of the dentist with his patients I wish to refer you to a paper by Dr. W. C. Trotter, read before the Toronto Dental Society, and published in the DOMINION DENTAL JOURNAL, January, 1904.

A DENTAL SYMPHONY.

By MALCOLM W. SPARROW, D.D.S.

Say nothing of your confrere that you would not have him say of you.

Lay carefully the foundation of true merit, and build upon it as if you were to live for ever.

Look not with envious eyes upon your neighbor's practice, but attend diligently to the establishing of your own.

Avoid gossip with your patient. Talk sense or hold your peace. Above all things, say nothing that can be repeated to your detriment.

Never malign another practitioner's good name that you may the better establish yourself in the eyes of your patient, for such an unseemly method may serve eventually as a boomerang to knock out the thrower.

Vaunt not of the immensity of your earnings lest your utterances savor of blustering prevarication. If you have a good thing, "don't give it away," lest others may wish to share it with you, and eventually usurp it all.

As early as possible absorb it into your cranial anatomy that you are not the *ne plus ultra* in the realm of dentistry. Others may have talents as brilliant as your own. Don't be a dental Philistine.

He who is doing his best to bring his work to the ideal standard has no time to criticise his fellow practitioners; even though he is hidden in a forest, with a reputation for superior skill, there will be a beaten pathway to his hermitage.

To yourself be true, to your patients courteous, and to your brother practitioner considerate, that your reputation as a gentleman may be of long duration.

And, finally, when you are called upon to "shuffle off this mortal coil," leave such a goodly record that none shall pause before your tombstone, doubtful as to your address in the great beyond.

DENTAL FINANCE.

By Malcolm W. Sparrow, D.D.S.

Buy nothing that cannot be paid for with spot cash.

Buy nothing that is not absolutely necessary.

Pay the least possible price for everything, and get as good value as possible for your money.

Learn to economize in materials and small things, but give good value for the money you receive.

Live within your means, and add to your savings account every week, if only a quarter, but try to save thirty cents out of every dollar you earn.

Be methodical and energetic in the collection of your accounts. Do business on strictly business principles, setting all sentiments aside. If a man earns his money, it is his, and he should not hesitate to ask for it, when the parties owing are dilatory. The man who owes for services rendered is under double obligation. He not only has your services, but your money as well. Use tact, however, upon all occasions.

Exact a fee for all professional services. Remember that you have expended considerable time, energy and money in learning how to do something which those who seek your services cannot do. Your knowledge and ability earns you your bread and butter.

Make no investment without first carefully considering the matter, and then "never put your hand out farther than you can draw it back." Above all things avoid the hallucinating "margins" of the Stock Market. If you must dabble in stocks, buy outright, below par, and then the mercurial fluctuations on 'Change will not disturb your rest. When the price has advanced sufficiently to net you a neat profit, sell out. *Never speculate.*

Never listen to the "Siren voice" of the stock agent, who enters your office with alluring propositions. He gets a commission, and is talking for his own interest. If he has such wonderful inducements to offer, ask him why he wishes to part with so good a thing; then watch him limp out of your sight, discomfited.

Learn to meet the world with the world's weapons. Pay no heed to flattery, but use it to your own advantage. Study human nature, that you may always be master of the situation, and remember that self-preservation is the one aim in your business and professional career. At times be bold, always prudent, and never fail to be congenial. Never give way to sensitiveness, for this is the vulnerable point in your business armor, and when your opponent finds it out, he can overthrow you with very little difficulty, and laugh at you for being so "thin skinned." Therefore, treat your sensitiveness as you would a snake in the grass. Crush it ! Trample it under foot ! Learn to keep a calm exterior, that no man may know where he has hit you. "Russel Sage, the great financier, made a granite determination never to get excited about anything—to preserve a serene disposition, with a cool, clear brain." Grasp every favorable opportunity while it is hot, and hang on to it with the tenacity of a bull dog, even if it should burn you for a time. Above all things, don't be a crank, a clam, or even a lobster.

SURGERY OF THE MOUTH.

By G. Lenox Curtis, M.D., New York.

Read before the New Haven Dental Society, March 15th, 1904.

I find it no easy matter to select a subject which would interest everybody, or one that will please the majority of the members of a society. My first impulse when asked to read a paper before this Society, was to say something about that much discussed, and generally abhorred disease—pyorrhea alveolaris—which is ignored by many, studied by a few, and successfully treated by a less number, even of those who claim to be proficient. My second impulse was to cite how the health of patients was often jeopardized by failure on the part of the dentists to diagnose abscessed teeth, and who, therefore, erred in their treatment. Finally, I thought, if I present a personal experience on surgery of the mouth, I might do more good, and perhaps interest all, and also stimulate a few to move out of the beaten rut of every-day habits. I will make a few remarks about pyorrhea alveolaris in another part of this paper. As an old lady once remarked, "Change of life is the spice of life." Change of work is not only restful, but instructive, progressive, and broadening. How many are there, among those present, who have deviated from the teachings of their preceptors, and who have worked out for themselves a new and better method of filling cavities in teeth? How many study and diagnose obscure diseases of the mouth, and adjacent parts? The opportunity is yours, and is superior to the opportunities of the average general surgeon. Therefore, I say, look for the unseen evil.

I will cite a case in which the dentists in charge were so intent upon their particular method of treatment (and one which I believe should be abandoned), that they lost sight of primary contributing causes of the disease. The history of the case briefly stated is: Miss ——, aged 33 years, was brought to me by her nasal specialist for an opinion. His question was, whether the disease in the jaw was responsible for the persistent inflammation of the right nares, and to what extent the antrum was involved.

The patient gave the following history: As a child was sickly. At the age of 14 she had her upper front teeth, which were bady decayed, filled with gold. Her health did not improve to any great degree, until after 16 years of age. Twelve years ago she received a blow under the right eye by a frozen snowball, which left the cheek-bone and eye sore for some time. Several years later she noticed that the upper right central incisor was sensitive to pressure, and later on, a swelling appeared on the right side of the roof of the mouth. Little attention was given to this, until a gum boil appeared under the lip. Six years ago she consulted a dentist, who diagnosed the trouble to be an alveolar abscess of the upper right central incisor. The abscess was treated through the pulp canal, and was thought to be healed. Two years later the trouble recurred, and she consulted another dentist, who followed in the lines of his predecessor. A fistulous opening in the gum over this tooth was present at this time, and the swelling in the roof of the mouth had recurred. After about six months of treatment, both swelling and fistula disappeared, and for six months the patient again thought herself cured, notwithstanding there remained an uneasy feeling, and a tenderness in the affected jaw. To her amazement, a swelling appeared on the buccal surface of the jaw, immediately posterior to the second bicuspid. She returned to her dentist, who apparently lost sight of the original seat of trouble, and thought there must be an antrum disease to contend with.

In consultation with another dentist it was then decided to treat the case by syringing through the fistula. Because of a tendency on the part of the fistula to close, before the dentist was satisfied that the disease in the antrum had disappeared, a small rubber tube about one-half an inch in length was inserted into the fistula. When she returned, however, two days later, the rubber tubing was missing. As the patient had no knowledge of its loss, it was concluded she had swallowed it. A vulcanite tube with a flange made after the Farrar plan, was then inserted, through which the wound was syringed, and the cavity drained. Several times during the last four years of treatment the wound healed, and the patient was dismissed. The fistula reappeared again, and then she consulted another dentist, who referred her to a nasal specialist, who in turn consulted me. During all these years of treatment the patient's health was poor, and she was almost constantly under the care of her family physician.

No history could be elicited of solutions passing into the nares during the treatment of the antrum.

Examination.—The first glance into the mouth revealed to me the unmistakable signs of an alveolar abscess over the devitalized right central and lateral incisors. On percussion, these teeth gave a leadened sound such as is always noticed in diseased conditions of the bone. The gum over these roots had a purplish hue, while over the other teeth on this side the condition appeared normal, except the part immediately surrounding the fistulous opening, which was situated between the anterior buccal root of the molar and the root of the second bicuspid, both of which were alive. There was a slight swelling in the roof of the right side of the mouth, extending from the molar, forward to the incisors. Both these teeth contained large approximating gold fillings, and a temporary filling in the palatal surface of the central incisor. A probe passed through the fistulous opening, and directed forward, met with no resistance until it came in contact with the roots of the incisors, but when directed toward the antrum, a solid wall of bone could be felt. This, when percussed, showed unmistakable evidence of an osteoma of considerable size. Trans-illumination decided the question as to the necrotic conditions. The light could be dimly seen over the antrum, but the portion of the jaw anterior to it was opaque. An operation was decided upon. The patient was referred back to the dentist who treated the case, with instructions to open both the dead incisors, to sterilize and fill the canals with oxychloride of zinc, forcing it beyond the ends of the roots. A few days later, and in the presence of her family physician and nasal specialist, I operated. An opening was made through the gum and periosteum, over the apex of these roots, which were found to be soft. Immediately back of these roots my burr came in contact with something soft and flexible, and with a tenaculum, I hooked out the long-lost rubber tubing. With a strong burr I removed the diseased portion of these roots, and ground and curretted away all the necrosed bone and granulating tissue and debris extending from the roots of the incisors to the palatal root of the first molar, leaving bare the palatal surface of the roots of the cuspid and bicuspids. The fistulous opening was enlarged. With heavy drills the mass of bone which was vital, and which entirely filled the antrum, except the upper and posterior portion (which was filled with fatty tissue), was ground away, until the antrum was about its normal size. Communication with the nares was then re-established, and the wounds were packed with gauze. This treatment was continued until the antrum was again covered with membrane, and the bone tissue in the roof of the mouth reproduced. No untoward symptoms were presented during the course of the treatment. The operation was performed entirely within the mouth, and through the two openings referred to. It was done without wounding or disfiguring the face, which is so often done in operations upon the jaws. The health of the patient rapidly and steadily improved, and is apparently normal.

Pyorrhea Alveolaris.—I am often asked, "What is the reason that so few dentists are successful in treating pyorrhea alveolaris?—a disease which belongs as much to their specialty as alveolar abscess. Do they lack college education in this particular branch, as well as in the surgical treatment of the soft tissue, or is it due to their individual make-up?" My answer is that few men have the manipulative ability, to apply that exactness of detail which is absolutely necessary to eradicate pyorrhea alveolaris.

I will now enumerate the detail of the treatment that is necessary to success, in the eradication of pyorrhea alveolaris. *First,* thorough removal of all pathological conditions, both from without and within the tooth. *Second,* the correction of malocclusion. *Third,* the supporting of loose teeth with splints, and the proper dressing of the soft parts around the teeth. If these operations are all thoroughly performed, success in removing the disease ought to be the result. Of course the alveolar process is seldom, if ever, reproduced, and the position of the tooth is maintained by the cicatrix formed in the healing of the soft tissue about it, and the re-attachment of the periosteum to the tooth, which, though imperfect, occasionally occurs.

These teeth may never become as firm as they were originally, but, they will become sufficiently firm for most practical purposes. This is as far as any dentist can go. Those who do not have the proper knowledge of the etiology of the suppurative variety of this disease can do no more. The suppurative variety is generally caused by syphilis, which disease causes degeneracy of the alveolar process and peridental membrane, and is often mistaken for gingivitis which is due to septic pulp canals, and to the irritations caused by rough fillings, gold bands, the direct application of arsenic to the pulp, salivary calculus, ptyalism and secondary osseous deposits within the tooth. When a differential diagnosis has been made, and these local causes excluded, we may conclude that the trouble is systemic, and should be treated as such. There is little or no advantage in asking patients if they have been treated for syphilis, for few will admit it; besides this, a large percentage of them do not know they have a taint of that disease, as it may be inherited.

This subject in all its details I have published a paper, entitled: "Syphilitic Loculosis Alveolaris," and read before the American Medical Association in June, 1900. At that time I called attention also to a sign in the mouth by which the presence of syphilitic conditions can be determined, and which I designated as the egg-skin scar, because of its resemblance to that membrane. This scar is commonly found in the mucous membrane of the mouth, usually along the ramus, alveolar ridge, or the cheek. A more positive test, however, is found in the examination of freshly drawn blood. This is particularly valuable to determine whether there has been sufficient treatment to kill all the spores of syphilis, as the scar is permanent.

My differential diagnosis between suppurative gingivitis and pyorrhea alveolaris, briefly stated, is: That in this stage of gingivitis there is an inflammation of the soft tissues alone, which has resulted in the peridental membrane being involved to the extent of pus formation, which pus forms pockets between the peridental membrane and the tooth. The pus generally works its way in the direction of the alveolus, which it eventually reaches. When the pus has reached and established a destructive ulceration in the alveolar process, then the disease has become pyorrhea alveolaris.

In these days of the spread of information respecting the importance of antisepsis, the visitor to the dental office looks keenly for evidence as to how the operator keeps his instruments and his person. When the patient's eyes travel on this inspection, happy is he who has prepared for it.

L'EPREUVE D'UN AMANT.

(Love Taps.)

By M. F. Cross, Oshawa.

Johnnie Canuck he alright man,
He no like mak' de troub',
He stan' for lot of de worrie,
But, since hees too hard rub,
By Gar, he stan' upon hees right,
He lift hees voice so loud
He start de eagle off its egg;
It hide behin' de cloud.

De eagle say, "Karoo!" whas dat?
He mak' so loud de fuss?
Dear me ! is it ma fren Johnnie
She kick up so much duss?
He got me trim for forty way
For maken beeg de noise,
If he was size lik' Uncid Sam,
You hear heem far de skies.

It no plezure see dat Canuck
Have fit for sure and dance,
I'll go for see ma bon Johnnie
And mak' heem more plesance;
"Bon jour, Johnnie, comment se va?"
"A bas le temps," say he;
For mak' it de smart bargain
You once more do beat me.

We have good case, Sir Wilfred say,
"We own Canal de Lynn.
It be de fine, beeg water way
Tak' out de Klondike tin.
De Yankee haff to leave de plas,
Dyae and Skagawaa."
John Bull he say, "Go back sit down,
You are so bold, Johnnie.

"Clear off the plas, your in de way
Your Uncid Jonattan,
We let you play on Isle de Pierce,
Close near Portland Canal.

He let you catch the sokeye feesh,
He leave dere some few can.
You pak dem full, do good beezness,
Cheer up ma leetle man."

So every tam we mak' tretee,
Wid Uncid Sam's de same.
She's little wonder Jack Cannuck,
He's gettin' tire de game.
De British lion he wink its eye
When eagle steal de caff,
An say, "Longs you down tak' de cow
John Bull he only laff."

Now Uncid Sam I like for sure,
I tink Sam he like me.
It's hes beezness to do hes bes',
For hees great beeg countree.
Dey's plenty room for boat of us
In Nort Amerika,
Yet every tam I push him close,
"Hinch over," John Bull say.

John Bull not always like dat talk,
When I help heem fight Boer,
He says nice tings, I fix tarrif,
He spik plezont some more.
He geeve us plenty libertie,
De bes' laws on de eart'.
He sen' us nice quite governor,
We pay him what hees wort'.

Beeg iron ship kip our coas' clear,
By Gar! dats where Bull shine,
Dats all for love, cost us noting,
John Bull he us remine.
So, when he push our mountain back,
He beat the Proffet Arab,
He mak' dose mountain come to us
We mus' be good and share up.

De shamrock, rose, and tissel yet,
Mus' mak' bouquet wid maple.
De beaver, he gnaw down no tree
Where want to roose de eagle.
We feel not bad, but jealous some
How John Bull like hees daughter
Columbia, dat "lope wid Sam,
While we stay wid de mudder."

Selections

ANTAGONISTIC ACTION OF DRUGS.

Strychnine does not seem to affect the pulse when given simultaneously with alcohol. In some cases strychnine seems to counteract in part the depressing effect of acute alcoholic poisoning on the respiration, and thus prolong life. The one apparent exception is doubtless explained by the poor physical condition of an animal receiving strychnine, and by the small dose. Strychnine does not seem to interfere materially with the narcosis from acute poisoning with alcohol, but apparently does delay the onset of paralytic symptoms. In subacute alcoholic poisoning strychnine seems to lessen the narcosis and paresis in the earliest stages, but in the later stages to increase the depression. However, a general conclusion is hardly justified, since only one control experiment was made. Although in no case was the strychnine competent completely to remove the effects of the large doses of alcohol which were employed, yet it may be considered probable that appropriate doses of strychnine (fairly strong therapeutic doses) would prove useful in the treatment of poisoning from even lethal doses of alcohol. No action on the nerve-cells by either alcohol or strychnine was demonstrable histologically. Many drugs depress the activity of yeast-cells, but no reliable stimulant was found; therefore, the antagonism of drugs in their action on these cells could not be studied. Heat was found to be a reliable stimulant up to 45 degrees C., but strychnine as an antidote to heat did not give uniform results at the successive temperatures, so that the antagonism is not a simple one.—H. D. Haskins (*American Journal of the Medical Sciences,* December, 1903).

GLOSSITIS AND STOMATITIS CAUSED BY A STREPTOCOCCUS.

Reports of tropical cutaneous affections have an interest much greater than the natural curiosity which every dermatologist takes in the description of rare exotic affections, and that is the question of climatic accentuation in virulency of well-known micro-organisms. The authors, attached to the indigenous hospital at Tananarive, have here presented an unusual exfoliative affection of the tongue and mucous membrane of the mouth due to a streptococcus found in long chains. Slides prepared from tongue scrapings and cultures in bouillon have always revealed the same streptococcus, which has been verified by Thiroux, director of the local Pasteur Institute, as the pathogenic agent. The affection has only been observed at Madagascar where it is endemic and at times epidemic and, while chiefly confined to the natives, the Europeans are not immune to it. The attack usually commences with a feeling of general malaise, slight fever, constriction in the throat, enlargement of submaxillary glands and a burning or prickling sensation in the tongue. In a day or two a small exfoliation of the mucous membrane of the tongue occurs, spreading peripherally and joining other patches to form polycyclical, shiny, or "varnished" areas with a slightly elevated, whitish border. The unaffected parts of the tongue accumulate a thick coating, which gives a striking contrast. The entire tongue may become denuded and resemble the varnished tongue of scarlatina. On the mucous membrane of the cheeks the patches may somewhat resemble mucous patches and might be mistaken for syphilis, but on the tongue the appearance is unique.

The affection seems to present no serious complications, and heals in the course of a couple of weeks under local applications of permanganate of potash. Chlorate of potash has no beneficial effect.

The condition known as "wandering rash," *exfoliatio arcata linguae, or "glossite exfoliatrice marginee"* (Fournier) certainly resembles in some respects the disease just described, especially in the slightly elevated, whitish borders, but it, of course, differs greatly in being much more chronic and not accompanied by fever or glandular enlargement. Fonoynont and Jourdran (*La Presse Medicale,* lxiv, page 653, 1903). Abstracted by A. D. Mewborn for the *Journal of Cutaneous Diseases*, January, 1904.

DENTAL LEGISLATION IN THE YUKON.

The bill which was introduced in the Yukon Council recently for the purpose of an amendment to the territorial dental ordinances was considered this morning by the civil justice committee. The committee heard argument by Dr. A. J. Gillis on behalf of the dentists, and decided that all persons hereafter applying for certificates to practise dentistry in the territory should have their qualification tested by examination by a proper board.

It was represented by Dr. Gillis, that there are colleges in America which issue dental certificates without proper qualification. He stated that Canada has but few dental colleges, but what she has are bona fide. On the other side of the line, he said, the best dentists of the world are found, but among them are also unscrupulous people who open dental colleges, so called, and issue diplomas without requisite knowledge of the profession.

The dental bill was referred to the legal advisor for revision with a provision for examinations.

It is said that some dentists who have been in Dawson have had no experience and carried diplomas from fake institutions. One is said to have been a janitor before trying to practise in Dasown.—*Yukon Sun.*

ROYAL COLLEGE OF DENTAL SURGEONS
DEC 11 1905
OF ONTARIO.

MR. DOOLEY AND THE DOCTORS.

Ivery time I go into Dock Cassidy's office he gives me a look that makes me wish I'd wore a suit iv chain armor. His eyes seem to say: 'Can I come in?' Between th' Christyan Scientists an' him 'tis a question iv whether ye want to be threated like a loonytic or like a can iv presarved vigitables.

"Father Kelly says th' styles iv medicines change like th' styles iv hats. Whin he was a boy they give ye quinine f'r whativer ailed ye, an' now they give ye styrchnine, an' nex, year they'll be givin' ye proosic acid, maybe. He sas they're findin' new things th' mather with ye ivry day, an' ol' things that have to be taken out, ontil th' time is comin' whin not more thin half av us'll be rale an' the rest'll be rubber.

"He says they ought to enforce th' law iv assault with a deadly weepin again' th' doctors. He says that if they knew less about pizen an' more about gruel, an' opened fewer patients an' more windows, they'd not be so many Christyan Scientists. He says th' diff'rence between Christyan Scientists an' doctors is that Christyan Scientists think they'se no such thing as disease, an' doctors thinks there ain't anything else. An' there ye ar-re."

"What d'ye think about it?" asked Mr. Hennessy.

"I think," said Mr. Dooley, "that if th' Christyan Scientists had some science an' the doctors more Christyanity it wudden't make anny diff'rence which ye called in—if ye had a good nurse."—*Factotum.*

A BITTER PARTING.

Long years had passed since they had met
And said adieu in pain;
That parting she would ne'er forget,
And now they meet again.

She looked at him with pleading eyes,
Beneath her locks of gold;
He did not seem to sympathize,
His glance was firm and cold.

'Twas then she told him to be kind,
And stay his cruel hand;
But to her fearful anguish blind,
He smiled at her command.

Torn by conflicting doubts and fears,
Filled with intense alarm,
She now almost gave way to tears,
And wildly grasped his arm.

He gruffly muttered, "Now, be brave,"
She gave a dreadful shout,
And, ere a friendly hand could save,
Another tooth was out.

—*Anon.*

DENTAL FATALITY.

Two months ago Mr. Ennis, manager of the Alexandra Hotel, Durban, died under chloroform during the extraction of some teeth. An inquiry showed that death was due to teeth having fallen into the larynx. Mr. Miller, Clerk of the Peace, stated he had been instructed by the Attorney-General to state that the papers in the case had been submitted to the Medical Council for the Colony, who expressed the opinion there was no evidence of negligence, either on the part of the dentist, or the medical man who administered the chloroform, and that under the circumstances the Attorney-General was not prepared to direct further steps to be taken, unless the relatives of the deceased so desired.—*Brit. Jour. of Dental Science.*

NEWS AND NOTES.

"By Recorder."

At a recent meeting of the Public Health Congress held in Liverpool, Norman G. Bennett, M.A., M.B., L.D.S., read an interesting paper on "Dental Hygiene and National Physique." At the outset he expressed gratification that much greater attention was now being paid to the question of the degeneration of the national physique. The importance of more physical exercise for children at school could not be over-emphasized. A due appreciation of the advantages of outdoor games and other forms of physical training, combined with such medical inspection as to enable incipient disease or mental defects to be checked, would go a very long towards obtaining physical perfection. The importance of disease of the teeth in childhood was still greatly underestimated, not only among the poor, but among the better classes. Increased attention should be paid to the feeding of all children attending State-aided schools. To the municipality of Liverpool, he was glad to note, belonged the honor of being the first to organize a municipal milk supply for the better feeding of the children of the poor. The care of the teeth and cleanliness of the mouth had hitherto been generally neglected, but he rejoiced to think that the bearing of dental disease upon general disease was now being generally recognized. It should not be forgotten that dental disease was of distinctly bacteriological origin, and children could not be taught too early to keep their teeth as clean as their faces.—*Dental Record.*

BROKEN APPOINTMENTS.

A case of considerable interest to dentists was heard in the Leeds County Court on the 11th of February, before His Honor Judge Greenhow. Mr. Percival T. Leigh, L.D.S. (Eng.), of Leeds, sued Mr. E. E. Ransome, also of Leeds, for £9 19s., professional services, which included several special charges for pyorrhea treatment, and also charges for broken appointments proportionate to the time lost, the latter amounting to half the sum claimed.

Mr. Clifford Bowling, solicitor, Leeds, appeared for the plaintiff, and explained that the defendant, by neglecting the special treatment prescribed by the plaintiff, had occasioned the extra expense.

As to the broken appointments he said that according to the custom of dentists, an hour was set apart for the defendant on different days, and that the plaintiff was unable to make any other definite appointments for the same time. A card was sent to the defendant saying " Patients not keeping appointments or not sending reasonable notice of their inability to keep them will be charged full time fee."

Where the defendant had notified his inability to keep the appointment no charge was made.

The plaintiff and his secretary gave evidence in confirmation of the opening statement.

Mr. E. F. Maud, solicitor for the defendant, cross-examined the plaintiff, to show that the appointments had not been made by the defendant but by the plaintiff, and that the plaintiff would employ the time not kept by the defendant in seeing casual patients, and therefore be paid twice over, and the judge expressed his doubt as to charges for broken appointments. Mr. Bowling, in reply, commented on the fact that defendant had not given evidence himself nor called evidence to contradict the plaintiff. Mr. Maud said they had tried to get expert evidence, but one dentist would not give evidence against another. Mr. Bowling said the defendant could have subpœnaed them if he had liked. As to the appointments made by the plaintiff, he likened the treatment in this case to the special attention that would be given by a doctor to a medical or surgical case, the only difference being that whilst the doctor went to the patient, here the patient went to the dentist. It was necessary for the dentist, through his secretary, to follow up cases of this kind, which were in fact akin to disease, and would suffer from neglect. In the end the judge found for the plaintiff for the full amount claimed with costs, saying that he must so find in the absence of any evidence called by the defendant.—*Dental Record.*

FATE.

By W. G. Beers.

Fisherman John is brave and strong,
None on the coast more brave than he;
He owns a cottage and fishing smack,
As snug as ever could be;
And what is truer than I could wish,
Fisherman John loves me.

Often and often, when day is done,
With smiling lips and eager eyes,
He comes to woo me. In every way
That a man may try, he tries
To win me; but that he can never do,
Though he woo me till he dies.

Fisherman Jack is a poorer man,
He owns no cottage nor fishing smack,
But a winning voice and a smile are his
And a brow that is never black.
Why should I break my heart to tell,
But *I* love Fisherman Jack.

He loves me not, but every night
He sits at the feet of Kathleen Bawn.
Never a heart has she for him,
For *she* loves Fisherman John,
Who cares no more for love of hers
Than the sea he sails upon.

Often we wonder, do Kate and I,
Why fate should use us so cruelly.
We think of the lovers we do not love,
And dream of what life would be,
If only Fisherman John loved her
And Fisherman Jack loved me.

—*Hya Yaka.*

SOME THINGS WE EXPECT OF THE YOUNG MEN OF OUR PROFESSION.

Dr. J. A. Libbey, in discussing a paper (read by Dr. J. G. Palmer, of New York, before the Odontological Society of Western Pennsylvania), said that the work that has been done in the past thirty years is marvellous, but that work is not completed, and it remains for the younger men of the profession, to whom this paper is more especially addressed, to carry on the work that has been started.

Dr. Palmer speaks of the glaring, conspicuous gold centrals, laterals, and canines, the crowning of which has become so general. It is astonishing the number of these people we see, and it is not always the ignorant class of people, I am sorry to say. As I pass along the streets in our own city here I can find professional men with glaring gold crowns on the anterior teeth, and I do not believe that I have to go out of this audience to find caps of that kind. Now, gentlemen, and especially the younger men of our profession, if any of you have a gold crown in the anterior part of your mouth, get some of your brother practitioners to put something else in there. There is certainly nothing esthetic or natural about it. It is a disgrace to the profession to apply these crowns, because there is nothing natural in any way about them, and in a profession like ours, in all that we do there should be some art. We should try to disguise our work, instead of trying to show it.

I remember one case in particular that I want to call attention to in this line. The gentleman is in this room who came to me for advice. Just home from college, starting in the profession, he felt particularly fortunate that he had gotten a patient. But the patient insisted on a gold crown on a lateral incisor. He tried to advise her out of the idea of it, but she was determined. He put her off and came over to see me. Said he, " What shall I do? I do not want to make it, but I do need the money. I cannot afford to let the case go." Said I, " Don't do it. If you take my advice you will thank me for it later." I saw him a few days after with smiles on his face, and he said that when he went back and positively refused to do it, she made an appointment and let him do as he thought best. There are plenty of cases just like that.—*Dental Summary.*

Proceedings of Dental Societies

FOURTH INTERNATIONAL DENTAL CONGRESS, ST. LOUIS, AUGUST 29 TO SEPTEMBER 3, 1904

Committee of Organization Dental Congress—H. J. Burkhart, chairman, Batavia, N.Y.; E. C. Kirk, Secretary, lock box 1615, Philadelphia, Pa.; R. H. Hofheinz, J. W. David, William Carr, William Crenshaw, W. E. Boardman, Don M. Gallie, V. E. Turner, G. V. I. Brown, J. Y. Crawford, A. H. Peck, M. F. Finley, J. D. Patterson, B. L. Thorpe.

The Department of Congresses of the Universal Exposition, St. Louis, 1904, has nominated the Committee of Organization of the Fourth International Dental Congress, which was appointed by the National Dental Association, and has instructed the committee thus appointed to proceed with the work of organization of said congress.

Pursuant to the instruction of the Director of Congresses of the Universal Exposition, 1904, the Committee of Organization presents the subjoined outline of the plan of organization of the Dental Congress.

The Congress will be divided into two departments: Department A—Science (divided into four sections). Department B—Applied Science (divided into six sections).

DEPARTMENT A—SCIENCE.

1. Anatomy, Physiology, Histology and Microscopy—Chairman, M. H. Cryer, 1420 Chestnut Street, Philadelphia, Pa.

2. Etiology, Pathology and Bacteriology—Chairman, R. H. Hofheinz, Chamber of Commerce, Rochester, N.Y.

3. Chemistry and Metallurgy—Chairman, J. D. Hodgen, 1005 Sutter Street, San Francisco, Cal.

4. Oral Hygiene, Prophylaxis, Materia Medica and Therapeutics and Electro-Therapeutics—Chairman, A. H. Peck, 92 State Street, Chicago, Ill.

DEPARTMENT B—APPLIED SCIENCE.

5. Oral Surgery—Chairman, G. V. I. Brown, 445 Milwaukee Avenue, Milwaukee, Wis.

6. Orthodontia—Chairman, E. H. Angle, 1023 N. Grand Avenue, St. Louis, Mo.

7. Operative Dentistry—Chairman, C. N. Johnson, Marshall Field Building, Chicago, Ill.

8. Prosthesis—Chairman, C. R. Turner, 33rd and Locust Streets, Philadelphia, Pa.

9. Education, Nomenclature, Literature and History—Chairman, Truman W. Brophy, Marshall Field Building, Chicago, Ill.

10. Legislation—Chairman, William Carr, 35 West 46th Street, New York, N.Y.

COMMITTEES.

Following are the committees appointed:

Finance—Chairman, C. S. Butler, 680 Main Street, Buffalo, N.Y.

Programme—Chairman, A. H. Peck, 92 State Street, Chicago, Ill.

Exhibits—Chairman, D. M. Gallie, 100 State Street, Chicago, Ill.

Transportation—(To be appointed.)

Reception—Chairman, B. Holly Smith, 1007 Madison Avenue, Baltimore, Md.

Registration—Chairman, B. L. Thorpe, 3666 Olive Street, St. Louis, Mo.

Printing and Publication—Chairman, W. E. Boardman, 184 Boylston Street, Boston, Mass.

Conference with State and Local Dental Societies—Chairman, J. A. Libbey, 524 Penn Avenue, Pittsburg, Pa.

Dental Legislation—Chairman, William Carr, 35 West 46th Street, New York, N.Y.

Auditing—(Committee of Organization.)

Invitation—Chairman, L. G. Noel, 527½ Church Street, Nashville, Tenn.

Membership—Chairman, J. D. Patterson, Keith and Perry Building, Kansas City, Mo.

Educational Methods—Chairman, T. W. Brophy, Marshall Field Building, Chicago, Ill.

Oral Surgery—Chairman, G. V. I. Brown, 445 Milwaukee Avenue, Milwaukee, Wis.

Prosthetic Dentistry—Chairman, C. R. Turner, 33rd and Locust Streets, Philadelphia, Pa.

Local Committee of Arrangements and Reception—Chairman, William Conrad, 3666 Olive Street, St. Louis, Mo.

Essays—Chairman, Wilbur F. Litch, 1500 Locust Street, Philadelphia, Pa.

History of Dentistry—Chairman, William H. Trueman, 900 Spruce Street, Philadelphia, Pa.

Nomenclature—Chairman, A. H. Thompson, 720 Kansas Avenue, Topeka, Kans.

Promotion of Appointment of Dental Surgeons in the Armies and Navies of the World—Chairman, Wms. Donnally, 1018 14th Street, N.W., Washington, D.C.

Care of the Teeth of the Poor—Chairman, Thomas Fillebrown, 175 Newbury Street, Boston, Mass.

Etiology, Pathology and Bacteriology—Chairman, R. H. Hofheinz, Chamber of Commerce, Rochester, N.Y.

Prize Essays—Chairman, James Truman, 4505 Chester Avenue, Philadelphia, Pa.

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Operative Dentistry—Chairman, C. N. Johnson, Marshall Field Building, Chicago, Ill.

Resolutions—Chairman, J. Y. Crawford, Jackson Building, Nashville, Tenn.

Clinics—Chairman, J. P. Gray, 24 Berry Block, Nashville, Tenn.

Nominations—(To be appointed.)

Ad Interim—Chairman, G. V. I. Brown, 445 Milwaukee Avenue, Milwaukee, Wis.

The officers of the Congress, president, vice-president, secretary and treasurer will be elected by the Congress at large at the time of the meeting, and will be nominated by the Nominating Committee.

The Fourth International Dental Congress, which will be held August 29th to September 3rd inclusive, 1904, will be representative of the existing status of dentistry throughout the world. It is intended further that the Congress shall set forth the history and material progress of dentistry from its crude beginnings through its developmental stages, up to its present condition as a scientific profession.

The International Dental Congress is but one of the large number of congresses to be held during the period of the Louisiana Purchase Exposition, and these in their entirety are intended to exhibit the intellectual progress of the world, as the Exposition will set forth the material progress which has taken place since the Columbian Exposition in 1893.

It is important that each member of the dental profession in America regard this effort to hold an International Dental Congress as a matter in which he has an individual interest, and one which he is under obligation to personally help toward a successful issue. The dental profession of America has not only its own professional record to maintain with a just pride, but, as it is called upon to act the part of host in a gathering of our colleagues from all parts of the world, it has to sustain the reputation of American hospitality as well.

The Committee of Organization appeals earnestly to each member of the profession to do his part in making the Congress a success. Later bulletins will be issued setting forth the personnel of the organization and other particulars, when the details have been more fully arranged.

H. J. Burkhart, *Chairman.*
E. C. Kirk, *Secretary.*

Approved—

Howard J. Rogers, *Director of Congresses.*
David R. Francis, *President of Exposition.*

Committee on State and Local Organizations.

The Committee on State and Local Organizations is a committee appointed by the Committee of Organization of the Fourth International Congress with the object of promoting the interests of the Congress in the several states of the Union. Each member of the committee is charged with the duty of receiving applications for membership in the Congress under the rules governing membership as prescribed by the Committee on Membership and approved by the Committee of Organization. These rules provide that *membership in the Congress shall be open to all reputable legally qualified practitioners of dentistry.* Membership in a state or local society is not a necessary qualification for membership in the Congress.

Each state chairman, as named below, is furnished with official application blanks and is authorized to accept the membership fee of $10 from all eligible applicants within his state. The state chairman will at once forward the fee and official application with his indorsement to the chairman of the Finance Committee, who will issue the official certificate conferring membership in the Congress. No application from any of the states will be accepted by the chairman of the Finance Committee unless approved by the state chairman, whose endorsement is a certification of eligibility under the membership rules.

A certificate of membership in the Congress will entitle the holder thereof to all the rights and privileges of the Congress, the right of debate, and of voting on all questions which the Congress will be called upon to decide. It will also entitle the member to one copy of the official transactions when published and to participation in all the events for social entertainment which will be officially provided at the time of the Congress.

The attention of all reputable legally qualified practitioners of dentistry is called to the foregoing plan authorized by the Committee of Organization for securing membership in the Congress. and the Committee earnestly appeals to each eligible practitioner in the United States who is interested in the success of this great international meeting to make application at once through his state chairman for a membership certificate. By acting promptly in this matter the purpose of the committee to make the Fourth International Dental Congress the largest and most successful meeting of dentists ever held will be realized, and the Congress will thus be placed upon a sound financial basis.

Let everyone make it his individual business to help at least to the extent of enrolling himself as a member and the success of the undertaking will be quickly assured. Apply at once to your state chairman. The state chairmen already appointed are:

General Chairman—J. A. Libbey, 524 Penn Avenue, Pittsburg, Pa.

STATES.

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Pennsylvania—H. E. Roberts, 1516 Locust Street, Philadelphia.

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Washington—G. W. Stryker, Everett.

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For the Committee of Organization,

EDWARD C. KIRK, *Secretary.*

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VOLUNTARY

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The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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VOL. XVI. TORONTO, APRIL, 1904. No. 4.

WHAT THE WORKING PEOPLE THINK OF US.

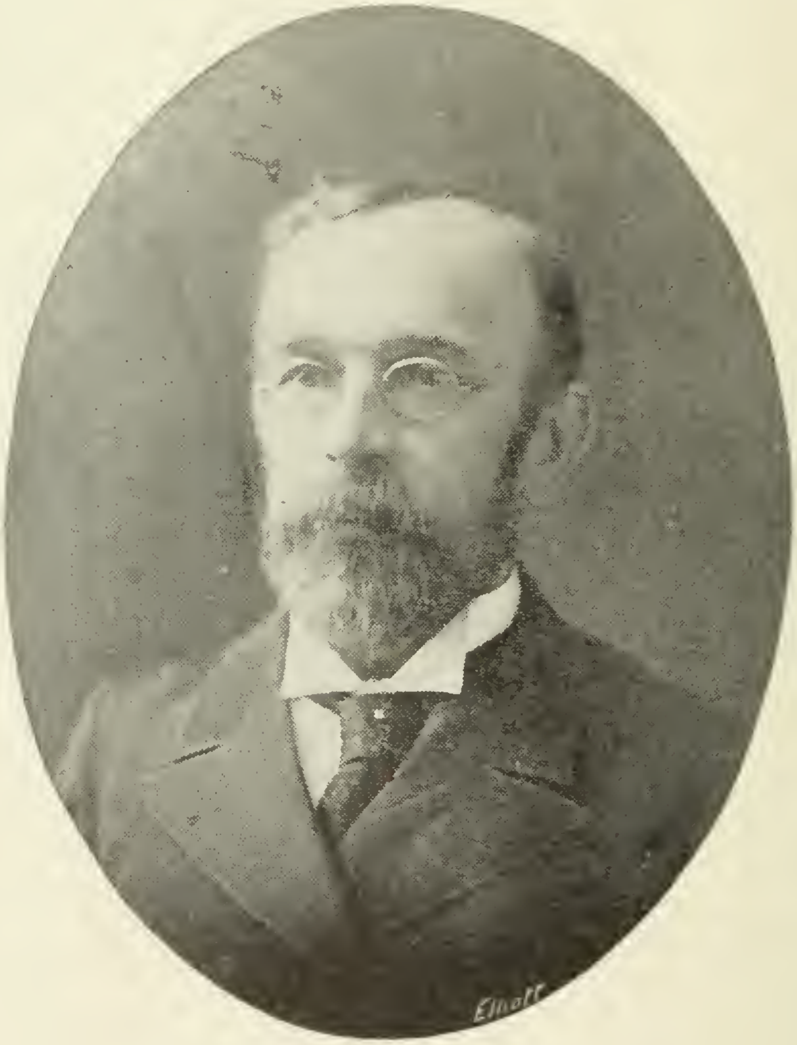
We quote the following from the Ashton-Under-Lyne *Reporter* of England. It very well illustrates the narrow position held by the professions of Canada:

SOCIAL SERMONETTES FOR WORKINGMEN.

BY JOHN TAYLOR.

"In Canada the same exclusive, monopolist spirit controls not merely the labor market, but it extends to the lawyers and the doctors, and the learned professions. It is all very well for Canadians to boast of their freedom, but they impose some senseless and vexatious restrictions on those who desire to settle in their country. If men are willing to be hewers of wood and drawers of water and drudges, and slaves, they are made welcome to this slavery; but if they had any brains or talents that would make them formidable competitors with the men on the spot, they are circumscribed and restricted in every way. You have a good example of this in the medical profession. No British doctor, however learned or well qualified, can practise there without first obtaining a local diploma; and if he wants to practise all over the Dominion, he must have a separate diploma for each province. If he takes a degree in Ontario, he must only visit patients in that particular area. If he crosses the river and sees anybody else on the other side, he is liable to persecution.

" Now I regard this as trades unionism gone mad. It is a system of tyranny and despotism that ought to be impossible in a free country. Canada is crying out for more emigrants, but she wants to pick and choose them for herself. She wants the men strong in arm and weak in head. The roughest pick and shovel hand can get six or seven shillings a day in towns, and in the outlying country places he can get a deal more. But these rough laborers have their own unions to keep up prices and to exclude foreign workmen and to discourage emigration from other countries."



R. E. SPARKS, M.D., D.D.S., Kingston, Ont.

PRESIDENT OF THE ONTARIO DENTAL SOCIETY, 1903-04.

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Dental Journal

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Original Communications

PREPARATION OF CAVITIES FOR PORCELAIN.

By C. E. Pearson, D.D.S., Toronto.

Read before the Ontario Dental Society, 1904.

Owing to the default of better men—men with broader and longer and more varied experience in the use of porcelain, and in order to help out the programme committee, I have reluctantly undertaken to write this paper. I say reluctantly because, until two weeks ago, I had not considered the subject from an essay's standpoint, and I therefore ask you to be charitable both for absence of new material herein, and for the manner of presentation, though I hope you will not refrain from free and lively criticism of the methods of operation.

It is not my intention to enter into a discussion of the relative merits of the low and high-fusing bodies. From recent tests of the crushing strength of each, we learn that either is sufficiently strong to withstand the stress of any direct pressure which it may receive in the mouth. So that any dispute regarding their relative strengths may be laid on the shelf. The improved furnaces on the market to-day which produce with ease a temperature sufficiently high to fuse the most refractory bodies eliminates from contention the advantage of a low point of fusion. The obtaining a gold matrix is unquestionably easier than one of platinum, but there is the disadvantage of investment, and a choice there is not worthy of dispute. All that is left, then, is the manipulation of the body and the obtaining of harmonious colors. As the writer has only used the high-fusing body, and finds it most exacting in both of these points, he is perfectly content to allow the advocates of the other—I was going to say stuff—to struggle with their greater difficulty of contouring, due to the great shrinkage of the low-fusing body and its tendency to become spherical and with their smaller range of color selection. The high-fusing porcelain is sufficiently difficult, and it is my honest belief that the time will never come when porcelain will be successfully used by the majority of practitioners, so great are these difficulties of manipulation.

Just what these difficulties are, with a few suggestions as to how they may be overcome, is all one may hope to accomplish in writing a paper of this length.

The first is that of knowing where to use porcelain. And in dealing with this question, I ask myself " Where may I not use porcelain?" And I answer, " That since the material has sufficient strength to withstand the stress of mastication, there is no limit to its application." That is to say, that if we had no other filling materials, porcelain could be used in every cavity which is presented to us. You may smile at such a sweeping assertion, but in order to prove to you the value of this material it is necessary to take this extreme stand, and then show you that it is not because porcelain could not be used in all cases, but because some other filling material could be more easily used that we make a gold, amalgam, or other filling. Therefore, it is not the limitations of this material, but rather the principle of ease of insertion which decides us in the use of porcelain or other filling material.

Now, if it can be shown that cavities may be prepared which will contain porcelain fillings as successfully as they will contain other fillings, then we may consider as proven the statement that porcelain has no limit in its application. To prove this would not be difficult, for you can all readily understand that a cavity form could be made in any tooth which would admit sufficient porcelain for strength and durability and prevention of recurrence of decay. But what would it mean for the operator in time, patience, skill, and what would it mean for the patient in pain and expense? So that while porcelain could be used, and used with success and with the highest artistic results, yet its use is limited because other materials are more easily inserted both for the operator and for the patient.

From these statements you will readily see that the operator must be familiar with the working qualities of his material and of the proper cavity preparation to make successful operations, before he is able to wisely choose porcelain in preference to other materials. It is, therefore, quite impossible to lay down any rules where porcelain may or may not be used. It is a question to be decided by the manipulative skill of the operator, and by his appreciation of comfort to his patients in the operation.

All that it is wise for an essayist to attempt, is to show the cavity form necessary for successful results, and leave you to choose when such preparation may wisely be undertaken.

A few principles may be stated. First, the convenience form, which must be such that will admit of easy removal of the matrix and insertion of the filling in one piece. Second, the outline form which must be curved lines, rather than lines forming acute angles. Third, retention form, which must be such that will most favorably oppose the lines of force in the act of mastication, as well as mechanically assist in retention of the filling. Fourth, resistance form, which must permit of sufficient body of material to withstand the stress of mastication.

The cavities treated may be divided into 5 classes; 1st, cavities involving one surface as labial or occlusal; 2nd, cavities involving two surfaces, as occluso-buccal; 3rd, cavities involving three surfaces, as mesio-labio-lingual on a central; 4th, cavities involving four surfaces, as angle on a central; 5th, cavities involving five surfaces as incisal edge or morsal half of a bicuspid.

Most fillings of the 1st, 2nd and 3rd classes may be retained by their own form, and the cement, while those of the 4th and 5th classes usually require retention by means of irido-platinum dowels extending beyond the outline form of the cavity, or into solid dentine within the cavity proper.

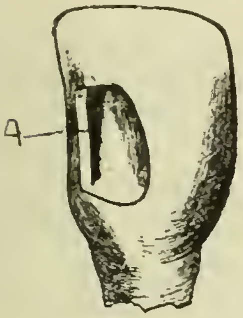


Fig. 2

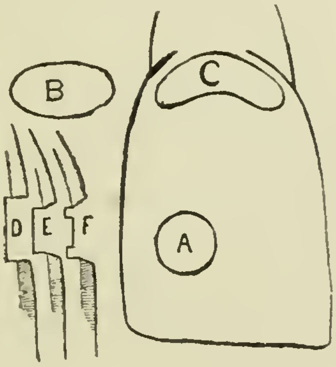


Fig. 1

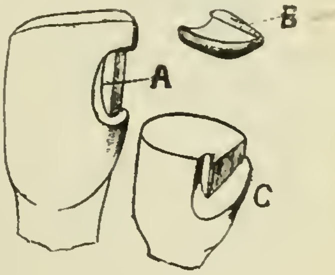


Fig. 3

The preparation for 1st class of cavities is simple. On the labial, buccal, lingual or occlusal surfaces, there is no difficulty with the first principle—that of convenience; while on mesial or distal surfaces there must be sufficient space for burnishing the matrix and insertion of the filling. If this be not obtainable, porcelain must not be used or else the cavity must be converted into one of the other classes. The outline form must approach the circular, oval or crescent-like, following the festoon of the gum (Fig. 1, A, B, C). In molars or bicuspids in occlusal cavities where the fissures are cut out, greater ease and success will be obtained as the outline approaches the oval form rather than the sinuosities of the fissures.

The retention form requires the cavity walls to be perpendicular to the surface of the tooth in order to insure no fragile edges on the inlay, which may chip off (Fig. 1, D). When enamel rods run diagonally, as they do toward the cervix, a bevel of 15 to 20 degrees is advisable at the risk of frailer edges, if the cavity is deepened into the dentine at right angles to the tooth surface (Fig. 1, E).

In shallow labial or buccal cavities a groove may be deepened into the dentine as Fig. 1, F, and the matrix burnished into it.

In this class of cavities it would be folly to widely separate any of the teeth, in order to place an inlay on a mesial or distal surface, where there is every favorable opportunity for recurrence of decay. It is better to fill with gutta-percha, cement, or extend the cavity to the third class.

Cavities of the second class, involving two surfaces, include those of the first class, which may be extended for convenience of manipulation. But, when we consider the outline form of such preparation, we find in most cases a total disregard of the generally accepted principle of extension for prevention, so that, if porcelain be used, it will be with the expectation of results not more permanent than in the use of any other filling material in such locations. Two exceptions may be made. First, in large initial buccal or labial cavities, which extend slightly to the mesial or the distal surface; and second, in bucco-occlusal cavities in molars. In the first case, trust that mesial or distal margin to Providence; in the second, it will take care of itself.

Fig. 2 represents the preparation of a proximal cavity of the 2nd class, after the method of Dr. A. E. Peck, of Minneapolis, which is an illustration of his method of retention with a groove at A. The insertion of the inlay is without separation, but we see the cavity preparation is not according to scientific methods. Probably it would be wiser to extend such a cavity to the third class. Still you see porcelain is applicable.

The 3rd class of cavities is more particularly confined to the anterior teeth, and may involve the proximo-labio-lingual, or the inciso-labio-lingual surfaces.

In Dr. Peck's articles in the Summary, we will find this class of cavity dealt with as in Fig. 3 and Fig. 4. Dr. Peck tells us that Fig. 3 A is "a slight groove in the floor of the cavity near the margin on the lingual surface, and will give a perfect retention from all lateral pressure. B shows ridge on the inlay. Labio-lingually, the cavity is slightly V-shaped, which will avoid loosening from the lingual pressure." C is a cross-section of it to show the preparation.

Such preparation as this is so complete and radical a change from anything we have been previously taught that time will be necessary to prove its efficiency. Little or no separation is necessary, and the difficulty of obtaining a matrix from the gingival surface is eliminated by the taking of an impression in cement and French chalk, and the matrix swaged and inlay made during the patient's absence.

From his drawings, which are, no doubt, somewhat diagrammatic, several difficulties are apparent. 1st, large proximal cavities could not be treated in this way owing to the loss of tissue which forms the pulpal wall, and supplies material for the rentention groove. 2nd, the necessity of extending the gingivo-labial angle, to make the seat of the cavity a straight line, must unnecessarily weaken the tooth, without giving a corresponding advantage. 3rd, the outline on the labial surface shows two acute angles of porcelain which must necessarily be weak. Possibly, in many applications of this form of cavity preparation, Dr. Peck overcomes these difficulties. In Fig. 4 an incisal edge is restored, according to Dr. Peck. With the writer the following preparation has proved successful (Fig. 5 and Fig. 5 E).

The convenience and outline form is much the same as for a large proximal gold filling, care only being taken that either the lingual outline should be slighty more extensive than the labial, or *vice versa*, in order to allow the removal of the matrix. Separation is necessary.

The labial and lingual cavity walls are at right angles to their respective surfaces, while the gingival and incisal are slightly bevelled outwards, thus leaving no unsupported enamel rods.

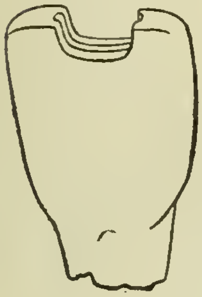


Fig. 4

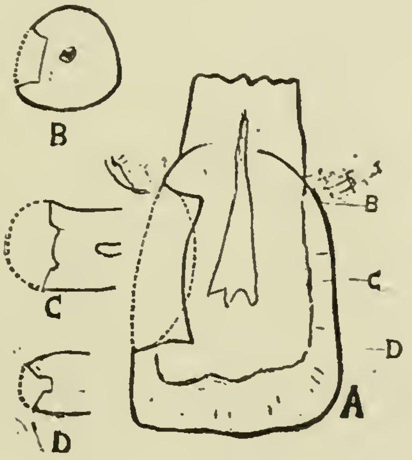


Fig. 5

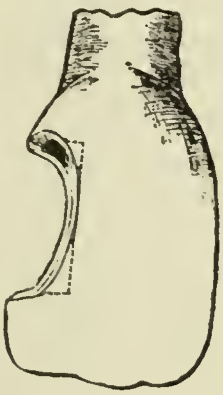


Fig. 5E

The inciso-pulpal and the gingivo-pulpal angles are deepened at right angles to the proximal surface to the extent of the labial or lingual margin, or deeper, if the amount of separation will permit, as is shown in Fig. 5, B, C, and D, which show cross-sections of the tooth respectively at the gingival margin, through the centre and at the incisal margin. Fig. 5 A is a longitudinal section showing the retention form of the cavity, while the red line indicates the outline form on the labial surfaces the same as in Fig. 5 E.

A cavity prepared in this way requires very little separation, and is based upon the accepted methods of cavity preparation for gold filling. The cement, however, makes a splendid substitute for the undercuts required to retain the gold. The curved outline and the angular retention form make it impossible to dislodge such a filling by any force other than a direct lateral pressure, which cannot be exerted in such a location.

If a cavity of the 3rd class be extensive, and likely to leave a weak incisal portion of tooth, it may be readily converted into the fourth class, and be treated without separation of the teeth, and without pulp-devitalization (Fig. 6). The necessary convenience form is obtained by cutting away the incisal edges until the pulpal wall of the cavity is parallel to the long axis of the tooth. The margins are at right angles to their respective surface, and the gingival-pulpal angle is made somewhat acute, to form a firm seat for the inlay. Two channels are then drilled into the lingual and labial angles for the reception of the dowels of irido-platinum wire (A, B as per Fig. 6). In laterals only one dowel is necessary. When there is no adjacent tooth to interfere a dowel may be inserted parallel and close to the incisal edge, but either method has given satisfaction. Where so great a portion of tooth is lost, that this seems insufficient retention, a groove may be cut parallel to the incisal edge with a pit at the end of it. An irido-platinum wire, which fills the groove, is then fitted into it, and bent up into a channel in the gingival seat after the illustration Fig. 7. The matrix is burnished to place the wire inserted, an impression taken, and the porcelain added while invested (Fig. 7).

Fig. 8 illustrates Dr. Peck's method of restoring such angles, but the essayist cannot see the advantage over the dowel system —it is much easier to drill two channels to receive the dowels than to cut away so much hard enamel—besides the prevention of warpage of the matrix demands the most exasperating efforts.

In any of the anterior teeth where the pulp has been removed, a cavity of the 4th or 5th classes may be restored by means of a dowel entering the canal as in Fig. 9.

The 5th class are those which restore the incisal edge on the occlusal surface. For convenience it is wise to have some slight separation in order to burnish the matrix over the proximal angles. The margins should still be at right angles to their respective surfaces, which gives a labio-lingual section such as Fig. 11 C.

Two dowels are then used, one on either side of the pulp (Fig. 11 A), or a heavy piece of square wire may be flattened, and used as a tongue, to fit a mesio-distal groove in the tooth Fig. 11 B.

Laterals and cuspids may be tipped in this way without hesitation. In the latter it is best to restore about 1-2 the tooth in order to guard against frail edges, but if sufficient depth be obtained in the dentine, a strong tip may be inserted without pins, as in Fig 12.

Fig. 13 illustrates a combination of class 4 and class 5, which may be used without the removal of the pulp, and is a good substitute for the angle illustrated, Fig. 7, though it requires some courage to cut away so much tooth tissue.

The retentive form of these various fillings requires little or no comment; it is self-evident that the irido-platinum dowels do most of the retaining, and that it is sufficient requires only a trial to demonstrate.

The resistance form which, of course, is as important as any of the other three forms, depends upon the right angles of the cavity margins along with sufficient depth of material to thoroughly enclose the dowels, and as much more as possible. 3-32 of an inch will sustain a great deal of hammering in the mouth.

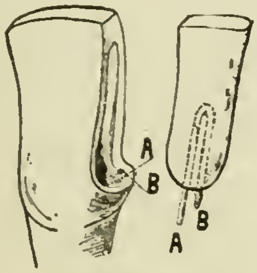


Fig. 6

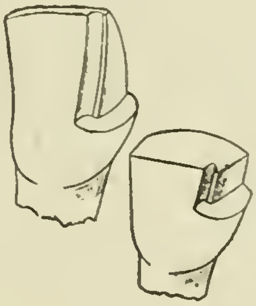


Fig. 8

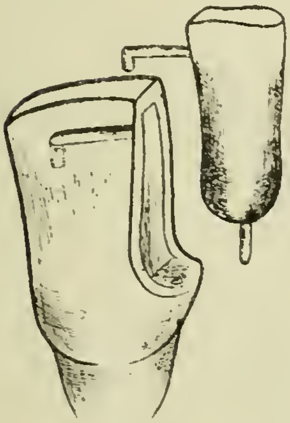


Fig. 7

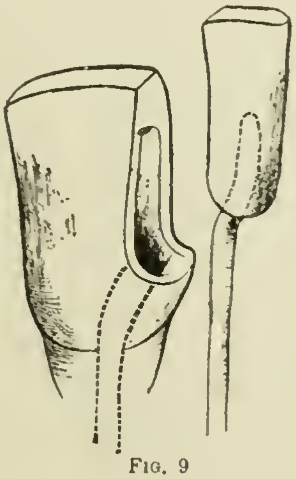


Fig. 9

In cases of short bite or where the inferior teeth wear the superior to a knife edge, there is only one remedy, open the bite. Then you will see that so far as the anterior teeth are concerned, we may safely conclude that porcelain has no limit to its application. As to the posterior teeth, we shall leave our demonstration to the future, but you may rest assured that the base of the difficulty is not with the material, but it is one of cavity preparation and the personal equation.

The technic of cavity formation requires a few remarks. Sandpaper discs and strips must be used with the utmost care, if used at all, owing to the disastrous tendency to round off sharp, well-defined, right-angled margins. In preference to these, use Ottolengui root trimmer, which cuts with a screw twist, leaving a perfectly smooth, polished surface with a sharp angle at the pulpal wall. Small Arkansas stones may be used, but are not a necessity.

The obtaining of a platinum matrix of No. 60 foil, or 1-1000 of an inch, is no easy task, and quite capable of overcoming the operator's patience, but sufficient has been printed in our recent journals to warrant the omission of many words in this paper. All one may say here is that experiments should be made without the mouth before any attempt within is undertaken.

In small cavities of 1st class, the platinum must be worked from the margins and gradually burnished and stretched inwards to the base of the cavity. In large cavities, first press the foil to the bottom with wet pledget of cotton, gradually working outwards, with an eye at all times to prevent any doubling of the margins. A strip of dam, stretched over the tooth while the matrix is in place, is a most valuable aid in securing the final burnishing. Anneal and reburnish, for the simple reason that if you do not, the stiffened platinum from the first burnishing will warp in the first baking. Any metal which is hardened by rubbing would do the same.

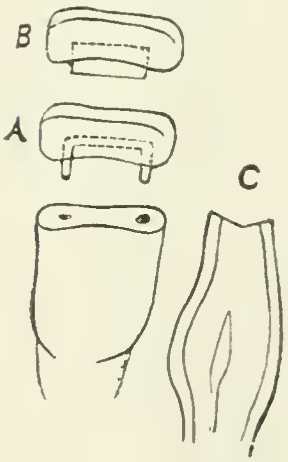


Fig. 11

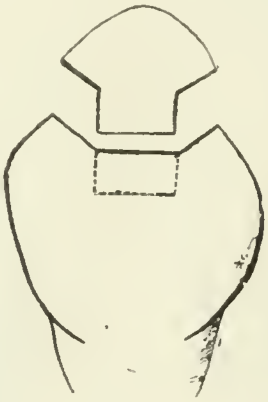


Fig. 12

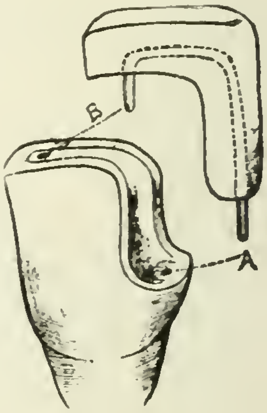


Fig. 13

To obtain proper colors, and to know when porcelain is baked is so much a matter of actual experience and experiment, and as so much has also been written upon this subject, it would be quite out of place to detain you longer than to say that Dr. Reeves, of Chicago, who is one of the most experienced men in the profession on this subject, tells us that colors are best obtained by adding the porcelain in layers of different colors, rather than by mixing them before fusing. He also tells us that by restoring the contour as nearly as possible with the foundation body, then cutting off the surface which will be visible, baking, and afterwards adding the enamel, little or no difficulty will be found from warpage of the matrix in baking. To control this has always been a difficulty with the writer, but if Dr. Reeves' method is better than that of building from the centre outwards, all that he has done for porcelain workers will be hailed with no greater joy than this simple advice.

In conclusion, it gives me great pleasure to have had the honor of writing for you this paper. It is incomplete; it is hurried; it is unworthy of the subject. I had hoped to give you more. I had hoped to present it to you in better form, but it is the best I was able to accomplish in the short two weeks at my disposal.

Again, I thank you, Mr. President, for the honor conferred upon me, and members I thank you for your patient attention.

LOW FUSING BODY.

By J. W. Meadows, D.D.S., Port Hope.

Read before the Ontario Dental Society, 1904.

It would not be becoming of me to stand before you as the advocate of low fusing body, and claim it to be the best and only. It has its advantages and its disadvantages. As a material for inlays it has its rivals, and it may be, its equals, but I rather think not its superiors. One dare not make a dogmatic assertion without good grounds, and without having studied both sides of the question. My experience has been mostly with low-fusing body; and the beautiful fillings one sees made from this material almost tempts one to say, "There is no other." In the few words I intend saying, I shall not draw comparisons between low-fusing body and high-fusing body, but shall, as briefly as possible, state the method of procedure in the making of an inlay using Jenkins' system.

My first experience with low-fusing body was five years ago, when practising in Vienna. Not wishing to give up the practice of making inlays of high-fusing body, I urged the gentleman with whom I was practising to have an oven set up, but he objected, claiming glass fillings to be just as good, and having the advantage of being more easily made, demanding less time to make and less expense. I was curious and very sceptical. The same day the doctor showed me some of his work—approximal cavities in the front teeth. They fitted passably well, but the color was very bad. At any rate, they were much better than a cement filling, and as they were used only where it was impossible to put in gold, they certainly had an amount of success. You will be curious to know how they were made. Taking the impression in the usual way, and filling in the body with a small-pointed brush, the matrix was held with the pliers in the flame of a spirit lamp until the mass fused. Naturally the fit was not of the best. I noticed in some of those glass fillings that they had what appeared to be a black lining, as if the matrix had never been removed. I puzzled over this for some time, and then came to the conclusion that the glass must undergo some change in coming in contact with the cement. I sought information from a patient who was a glass and porcelain manufacturer, and he said, if I remember rightly, that lead or tin played some part in the manufacture; hence the discoloration. I saw one of those discolored glass fillings made in this way, which the patient said had been in the tooth for twenty years. I must remark, *sotto voce,* that they had mighty good cement in those days. There was nothing in glass for me. I remembered too well those beautiful fillings which I had seen Dr. Capon, of Philadelphia, make. I got a Jenkins' outfit.

The shading of the Jenkins' body is excellent. Very seldom has one much difficulty in matching; and a blending of the different colors by a skilled worker will produce any other color or shading desired.

The choosing of the color or the mixing of two or more colors to make a certain other color desired, is the most difficult part of porcelain work. The shaping of the cavity requires a steady hand and knowledge, but the choosing and blending of the colors requires not alone practice, but an innate gift to insure the greatest amount of success. One has a tooth before one exactly the color of the shade in hand. The filling is inserted in an approximal cavity and we are astonished to see that it is much too dark. We had not reckoned on the shadow cast by the neighboring tooth, and with the fact that we are looking at the inlay across its width, so to speak. The depth of cavity, the position of the filling, the kind of cement, and the fact that tooth, cement, and inlay are different bodies with different characteristics, all must be taken into consideration in the choosing of the color.

The shaping of the cavity is very important, and if not done on sound scientific principles, a failure must ensue. Never make a saucer-shaped cavity, but rather, as much as possible, make the walls to run at right angles, if I may use the expression, to the plane of that part of the tooth which is being cut. In this way one avoids feather edges. Cut the cavity out roughly in the ordinary way, then use a barrel-shaped gold-finishing bur, and finish with a fine carborundum stone. Polishing strips may not be used. Square bottoms, strong, uniform, and symmetrical edges, no bevelling, no sand-papering, are points to be observed.

Sometimes one sees a large undercut. Do not sacrifice so much good tissue to get rid of the undercut, but rather fill in as much as is needful, with stents or wax, which, when wet, will not cause the gold to stick.

The taking of the impression with pure gold foil, No. 30, is, I think, much more easy than with platinum, and the edges are sharper. Inasmuch as gold is more ductile, soft and malleable than platinum, which is harder and more liable to wrinkle and tear, so much the more readily does gold take the form of the cavity, and the sharpness of its edges. In the taking of impressions, sufficient access obtained by separation must be had; for, if there be any difficulty in the disengaging of the impression, one is apt to bend and spoil it. Then comes a temptation to cut away good tooth tissue. I have seen so many cases where an extravagant amount of good tooth tissue was sacrificed to this end, that one is tempted to ask which did the more harm, the decay or the dentist. The work, no matter how well done, will not last for ever, and that patient will want that tooth tissue you cut away some day. But what if it is an impossibility to gain separation? you ask, and the patient demands an invisible filling. Then build up that part of the cavity of which you cannot get the impression with gold or amalgam, and put the porcelain over it. Always avoid taking hold of the impression with the pliers until it is free of the cavity. Taking the chip blower, one blows a stream of air gently against the overhanging edges of the impression until it comes away. Some advise taking the impression with stents or wax and then from a plaster model, making an impression, and letting the mechanical man or the porter make the filling, as I have known. Now it stands to reason that no impression could be taken from a plaster model so sharp as from the natural tooth. But still it has its advantages, for in very deep cavities where the gold is apt to tear, one can make the filling partially finished in the patient's absence, and then, placing in the cavity on the return of the patient, sharpen the edges of the matrix on the real tooth, and then finish. It will not be necessary for me to mention the method of taking an impression further than by saying that spunk is good to press in the gold, and that the overlapping edges of the impression should be well burnished with a round head polished burnisher. This last I think to be good, for by so doing the gold becomes harder and develops a certain amount of spring, so that if the impression be sprung by the current of air, it is more likely to resume immediately its former position. In the taking of large impressions, I have run paraffin wax into the matrix, while it is in the cavity, until it is quite full, which reduces the danger of distortion to a minimum. This wax will be burnt out in the oven, after the impression has been invested. One always should leave as much overhanging edge to the impression as possible, it having then a much better hold in the investment, and by the great contraction which takes place in fusing, is not so likely to suffer distortion.

The impression one now invests in asbestos which has been mixed with water, or alcohol, if one is in a hurry; the alcohol burning out in a few minutes. Care must be taken that all alcohol be burned out before making the first bake. Because it happens that the color of the inlay is quite changed by action of the burning alcohol. If the impression be large, some dentists advise mixing an amount of plaster with the asbestos, claiming that the matrix is less likely to change its position in burning. In making large inlays, I think it is wise to build the filling up from the centre, using a small pointed sable hair brush, the body being mixed with water to a cream-like consistency. If a large impression is filled completely, and apparently to the original contour of the tooth, then the body, contracting towards the centre, is apt to distort the matrix; especially at the cervical edge, drawing away the gold from the investment. This contraction is the disadvantage of low-fusing body. In it we have color, density, strength, easy manipulation, but the contraction makes the work somewhat longer, and totally obviates the making of porcelain jacket crowns, at least with the ordinary facing. This I think to be the only drawback to the low-fusing body. If we had facings of the same fusing point as the body all would be well, but as it is, there is no real union between the facing and the body, and the contraction of the latter always checks the former.

In fusing, do not heat too suddenly or too much, otherwise first, bubbles will form; and second, the color will be spoiled. Before cementing, one should try the filling when the tooth is wet. It will then be seen to the best advantage. Adjust the rubber dam, dry cavity with alcohol, make undercuts in the inlay, not deep, but broader and converging: place the inlay in the cavity; then, taking a spatula with a small amount, a very small amount; of wax on it, lift the inlay out of the cavity. One has the inlay now in exactly the position for insertion, after one has put in the cement; for it sometimes happens that an inlay is put in end for end, and much time is lost, and the cement becomes thick before one can rectify the mistake. *Apropos,* Canadian Balsam, I believe, is claimed by some to be good. The cement should be creamy, and never so thick that one has to use force to get the filling into place. Flow wax over the tooth with hot air, or with a hot spatula, and the filling is finished until the cement hardens; then polish the edges, if necessary, with a fine Arkansas stone.

The amalgam filling, one of our best friends, had it always been rightly used and treated with the same care and respect paid to its nobler relation, the gold filling, would stand higher in the estimation of our patients and would demand a better fee to-day. Then let us not misuse porcelain in the same way by putting it in every hole and corner accessible, but let us pick our cases, giving due regard to practical and to esthetical reasons. For that reason, I do not advocate the insertion of very large approximal molar fillings. Not that the body does not stand the strain of mastication, for it does, if we have no feather edges; but that we cannot get so perfect an adaptation as when the cavities are much smaller. Also in case of pulpitis, or of death of the nerve, the extraction of such a filling is almost an impossibility. In cases of approximal cavities in molars or in bicuspids, when the cavity involves the greater part of the crown and extends beneath the gum line, or has any other difficulty that prevents the taking of a good impression, and yet the necesity remains of making an invisible filling, I build up the tooth almost to the line of vision with amalgam, and finish with porcelain. Care must be taken in this case that the inlay receives enough body. I remember the first all-porcelain filling which I made for such a case. The patient had no pain worth speaking of by excavation of the cavity, nor by the insertion of the filling, but the next day I worked two hours to get it out. The patient had enough of me that time, and never came back.

Every dentist in Vienna reaches out his hand for porcelain, and puts it in whenever he gets the chance. In that city, as I think in all Europe, there is a dead set against filling material being seen in the teeth, and a gold crown, or large gold fillings in the front teeth, stamps the wearer as being either an American, or as one not belonging to the best class of society.

The limits of porcelain are not yet defined, and if it is not an ideal filling, it is only because it demands assiduous practice, and such great technical exactness in manipulation.

DISCUSSION ON DR. MEADOWS' AND DR. PEARSON'S PAPERS.

Dr. Howard.—*Mr. President and Members of the Ontario Dental Society,*—Your time is very limited to discuss these valuable papers, so I will simply call attention to a few points. Dr. Pearson advocates grooves in the preparation of the labial and buccal cavities as shown in Fig. 1. Are these necessary for the retention in such locations? Little or no force can be exerted upon such fillings, and perfect adaptation of the inlay to the margins of the cavity, with roughening of that portion of the inlay which would come in contact with the cavity walls with sand or emery paper to afford adhesion for cement, will be all that is necessary to retain them; where such a cavity becomes compound by involving a portion of the approximate surface either mesially or distally, or both, to the angle of junction of it with the labial surface, with gold and continue with porcelain. You will not then have to trust to providence concerning your lingual margins. I very much favor the extension of approximal cavities which do not involve the incisal edge either on the lingual or labial surfaces, to afford easy removal of the matrix and insertion of the inlay. This will overcome the necessity for extreme separation, and save the patient much suffering therefrom. An inlay made to restore an incisal angle retained only by dowels in the seat of the cavity where no retention is gained at or near the incisal edge, would seem to be only adapted for such cases of malocclusion, where no force can be exerted upon the inlay. An inlay with dowel turned at right angles and inserted into a socket cut for same parallel with the incisal edge, seems to present great difficulties of insertion unless considerable tissue is cut away. I thank you for attention to these few suggestions.

Frank D. Price.—Mr. Chairman, ladies and gentlemen, I was asked by your committee to lead in the discussion of Dr. Meadows' paper, not because I had a wide experience in using low fusing bodies, but because Dr. Meadows spoke exclusively of the Jenkins' body, and I am one of the very few in the province that are yet using that body. I want, sir, to thank Dr. Meadows for the very entertaining and at the same time clear and concise paper he has given us. It was not my privilege to read his paper before this convention began, so I have not been able to prepare a particular discussion of it. I would, however, like to call attention to a couple of points in it. His idea of sticking the inlay to the end of an instrument with soft wax for easy insertion is a good one. Also he suggests a good plan, that is, to fill parts of cavities difficult of access, or deep seats of approximal cavities in molars and bicuspids, with metal before proceeding with the inlay. Like Dr. Meadows, it is not my intention to prove the Jenkins' low fusing bodies superior in all respects to high fusing bodies. But I would like to pay a compliment to, and mention a few points of excellence in, the Jenkins' low fusing bodies. Dr. Ottolengui says that Jenkins' bodies are not to be classed with the low fusing bodies on the market. The Jenkins' bodies are strong. Experiments at St. Louis, testing the relative strengths of different bodies, have proved that Jenkins' bodies stand high in the list. It has been said that they shrink too much. On this point let me quote Dr. N. S. Jenkins. He says: "Those bodies for dental purposes that shrink so slightly that they can be finished in two fusings, are too weak in structure to be used safely except in considerable mass," and I maintain, sir, that a considerable shrinkage in a tooth body is necessary to obtain the density and consequent strength that is so desirable. Prof. Keyser, employed by the Government of Saxony, made a series of experiments with such tooth bodies as he could obtain. He himself was entirely disinterested, and made his experiments in secret. In his report he said he found the Jenkins' bodies superior to all others in texture, fineness, density and edge strength. You all know that ordinary tooth body can be quite readily cut and polished with sandpaper discs. I have run a sandpaper disc with the engine on the smooth, glazed surface of Jenkins' body, and could hardly scratch it. It is necessary to use carborundum to cut it, it is so hard. In colors it has perhaps as wide a range as any other make, and quite as permanent. I use an electric oven, and as soon as I see the body begin to fuse, I reduce the current and close the oven door, and find there is just enough heat in the walls of the oven to fuse the body perfectly. The color and texture of any body may be greatly impaired by over-fusing, and I think that is a mistake many of us make. Jenkins' porcelain is more like natural teeth in appearance than are high fusing bodies, because the latter have not so smooth a surface and often have a porous appearance. Again let me quote Dr. Ottolengui as saying, "I have never yet seen any high fusing porcelain that in any sense seemed to my eye to match tooth structure as well as the Jenkins' body." It is often desirable to cut and polish an inlay or a crown. The high fusing is apt to be porous, so that a polished surface is impossible to obtain, and the porous cut surface absorbs stains that permanently darken it. The Jenkins' body, being homogeneous, may be cut and perfectly polished. And, gentlemen, I think that the advantages of the low fusing point of Jenkins' body has been greatly underestimated. There has been a lot of boasting here this morning by high fusing advocates, as if the higher fusing the body the more glory somehow. Jenkins' low fusing fuses at 1550 degrees Fahrenheit, a heat that can be easily examined with the eye, and the fusing noticed. Consolidated and Brewster's fuse at about 2,200, or 650 degrees higher, and Close's body at 2,300, or 750 degrees higher, temperature that will not permit of usual examination; and so I claim the fusing must be partly at least by guess. Another point worthy of mention is that for the same amount of use, the low fusing body is perhaps four times as easy on the electric oven as the high fusing. Platinum wire is used in producing the heat, and the wire must be heated considerably hotter than the inside of the muffle. Platinum expands in proportion to the degree that it is heated, and it expands very much if heated much. With the high temperature there must be a crawling of the wire, and it is more apt to be downward around the sides of the muffle. At a heat above 1,500 degrees platinum begins to soften, and at the extreme heat it is very soft and crawls more easily. Again, any wire is made brittle by having an electric current pass through it. The result that we so often see is easily accounted for. After the great expansion produced by the critical heat of high fusing, the wire never regains its original condition, but is in a condition of strain until, as the wire becomes brittle, it separates slightly at some point. It may be only the thousandth of an inch, but the current will not jump it unless inductance or some unusual means is used to force it. How delightful it is to have a favorite patient in the chair, and after having obtained a matrix, and after dilating on the wonders of porcelain, to find the oven out and yourself helpless! An electric oven will probably last four times as long in baking low fusing instead of very high fusing body. If, as claimed, the Jenkins' low fusing shrinks more than high fusing bodies, so that the case must be heated oftener, the shorter time required for each heating and cooling fully compensates for the fewer fusings of the higher bodies. A marked advantage we claim for the low fusing is that it may be used in conjunction with gold, thus permitting of the gold matrix for inlay work. Then also the frame for a porcelain bridge may be made strong, as the gold does not need to be so sparingly used in the joints. The fusing point of pure gold is 450 degrees higher than that of the Jenkins' low fusing body. The last point I wish to mention is that of contour work. Much has been said in this convention of the necessity of using high fusing bodies for contouring. Perhaps contouring can be done with less care using high fusing bodies, but by adding only a little for each baking, and using care to not heat above the fusing point, beautiful contours of any desired shape may be made with the low fusing body referred to. Gentlemen, I am not the business representative of any particular tooth body, as my few words might seem to indicate. But I am getting tired hearing men shout for high fusing body when my observation is to the contrary. I think the Jenkins' low fusing body is stronger, looks better, has a wider range of usefulness, and is less difficult to manipulate than the high fusing bodies. Thanks for your kind hearing.

PORCELAIN CROWN AND BRIDGE WORK.

By G. M. Trewin, D.D.S., Collingwood.

Read before the Ontario Dental Society 1904.

It is the ambition of all of us to restore to their proper function those teeth that through accident or disease have become useless in the mouth, and to restore them as esthetically and artistically as lies in our power.

The present-day dentist to be "up-to-date" should, I might say "must," have a knowledge of the ceramic art, for how many of us are there who have not had patients come into our office recently, and when they learned that certain teeth or portions of teeth must be restored by the use of gold, have asked how, with the great strides that have been made in dentistry of late years, nothing has been found to avoid the use of gold. The laity are aware that there is something to overcome their distaste for the show of metal in conspicuous places. How, when our patients are asking for it, are dentists, who claim to be up-to-date, to explain this fact, for there is such a substance. Our patients know it, we know it. Then why not use it, for porcelain puts it in our power, in crown and bridge work at least, to prevent the show of metal in the mouth. It has no longer become a fad or side issue, but is here to stay, and there is no brighter future for any substance we use than for porcelain, for it is artistic, esthetic, useful and strong. With the numerous methods and furnaces of every sort, there is no excuse for any progressive dentist not doing the porcelain work required in his office.

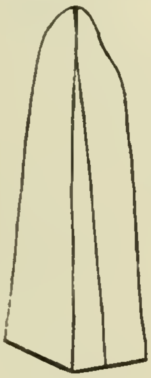


Fig. 1

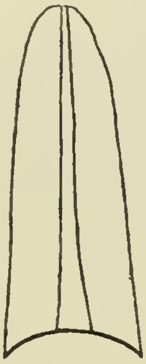


Fig. 2

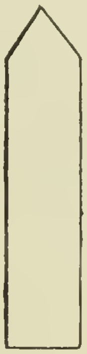


Fig. 3

While it requires perhaps more careful diagnosis, mechanical skill, artistic taste, and prophylactic measures to do successful crown and bridge work, yet, perhaps, the present ordinary common crown and bridge work is in appearance the most artificial work we see. How humiliating it is, after having used the greatest care in selecting shades and constructing our piece, which is faultless in workmanship and beautiful as regards mechanical skill, to see, when placed in the mouth, the off-color of the shades due to lack of translucency of the facings and the dark or dirty lines where the facing joins the metal.

In crown and bridge work porcelain has its most important part, for by it natural appearance and cleanliness can be obtained, no dark joints appear, and the original translucency of the facing is not affected, a cracked facing scarcely ever appears, and it has the required strength if properly constructed, for most failures in this branch of porcelain work are due to faulty construction or lack of judgment. One other advantage is the simplicity of construction and ease of manipulation in the making of one of these crowns or bridges.

For crowning the procedure is slightly different from that of the ordinary banded Richmond, but instead of gold, platinum is used, and for solder, pure gold and 25 per cent. platinum it to desired position, for thus we have more substance to work solder. The indication is for porcelain in the ten anterior teeth, and for these the root preparation is as follows: Where cap and band are used, the root is ground to 1-16 inch of the gum-line, and the enamel removed. Instead of being bevelled labially (Fig. 1), in order to hide band, it is ground straight across, for no band will show in this case, as will be seen later. Lately I have been grinding them concave mesio-distally (Fig. 2), for by so doing you get the maximum amount of porcelain without injuring or marring the festoon of the gum. Lingually the root should be ground as far under the gum as possible, to give the greatest possible bulk to the porcelain, for the strength of porcelain increases with its bulk. Having the root prepared, take measurement, and make a band of 28-gauge platinum, festoon, and fit. I might say here that I usually fit this band before I grind the root closely to the gum, then grind root with band on

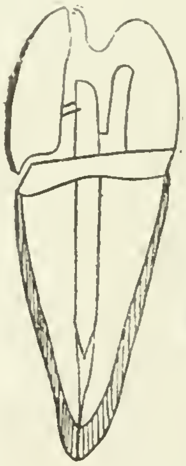


FIG. 4

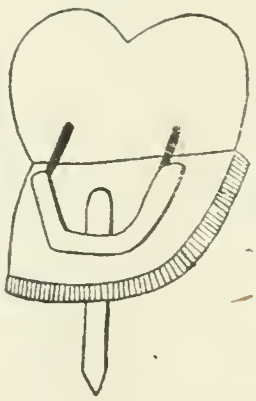


FIG. 5

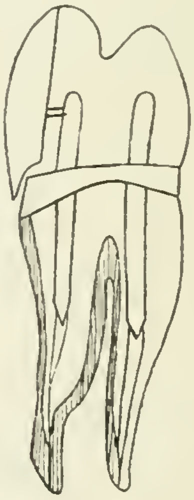


FIG. 6

on while fitting band. Now burnish a piece of 32-gauge platinum to the end of root, and solder to the band forming cap. Next prepare canal for post, being careful to ream the hole just large enough that the post will fit it tightly, for frequently the failure of bandless crowns is due to a small round post, a large round hole, a poorly fitted base, and a setting of cement. For bicuspids and laterals use irido-platinum, posting 18 gauge (B & S.), for centrals, bicuspids and molars 16-gauge. Have the posting square, or the shape used in "Logan's" tapered at point (Fig. 3), and of the same size throughout, leaving long enough to protrude some distance from the end of the root. Now replace cap and, having located the position of root canal, force the pointed post through floor of cap. Remove by pressing a piece of heated gutta-percha against them, and flow a little plaster about pin and cap to hold in their relative positions; then solder post to cap. Next place cap in position and take a bite first, then an impression. In the impression, flow the cap full of wax and a coating about the post to make removal from model easy. Run model and articulate.

FIG. 8

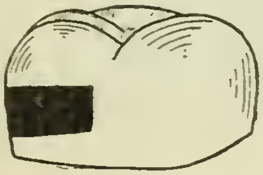


FIG. 9

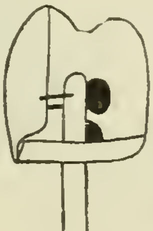
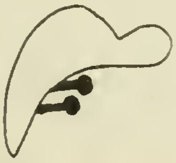


FIG. 16



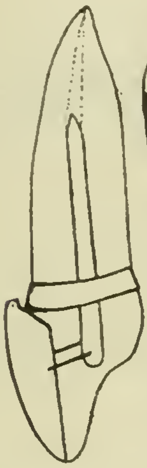


FIG. 7

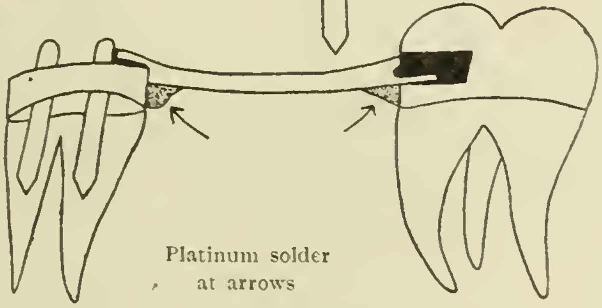


FIG. 12

An additional support for the lingual cusps of bicuspids and molars greatly strengthens them, which is obtained by soldering posts to the cap (as in Figs. 4 and 5). In double-rooted bicuspids the lingual post (Fig. 6).

In selecting facings choose one preferably a little dark on account of the sometimes bleaching in baking. Grind a groove in the neck of the facing, making it very thin, that it may project over the band labially (Fig. 7), so that porcelain may be baked over band and anchored there. If the facing be not thus ground, and the band simply covered with a thin layer of porcelain, this will almost invariably crack or shell off, exposing the metal.

Having ground facing to desired shape, size and fit, bend the pins till they come in perfect contact to post or cap. Wax to place, invest and solder the pins to post with pure gold, thus combining the strength of soldering and the fusing of porcelain to the facing. Use a minimum amount of gold, holding heat to it till it seems to almost disappear, for if too much gold be used when porcelain is baked over it, there will remain a hole where the gold was thus weakening the crown. This is the only soldering in a crown or bridge that should be done with pure gold, and the reason is this: The heat required to melt 25 per cent. platinum solder often burns out those delicate yellow shades we get at the necks of facings, and which are very desirable, while the heat required to melt pure gold does not do this. Having facing soldered to post, next take a disc, and round or smooth off all sharp angles or corners of metal, as these tend to cleavage of the porcelain; then wash thoroughly, being sure no small particles of investment material remain in crevices. The crown is now ready to be built up with body and baked, which subjects we will deal with later.

Fig. 10

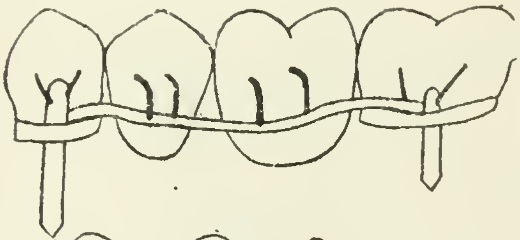
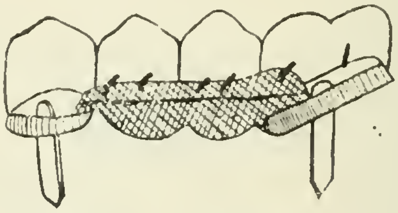


Fig. 14



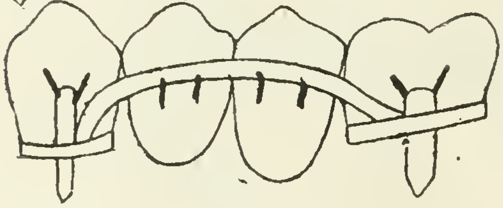


Fig. 11

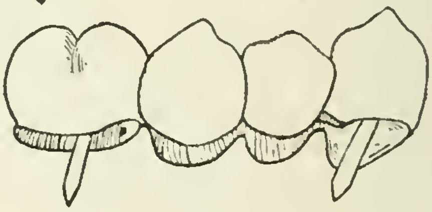


Fig. 15

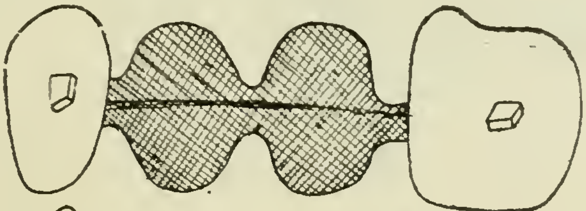
Now, as to the application of porcelain in bridge work. The greatest strength of a porcelain bridge lies in the construction of the metal frame work on which it is built, and which should be so placed as to give the greatest bulk and strength to the porcelain, at the same time having sufficient rigidity to overcome the stress of mastication. If this frame work is properly constructed—joints in close apposition, and soldered securely with 25 per cent. platinum solder—there need be little fear regarding the strength and reliability, if properly baked with a good body. For abutments for bridges, the crowns which I have already described are used for the ten anterior teeth and for first molars, but if the abutment be a second or third molar or an inconspicuous "first," shell crowns made of pure platinum can be used, taking precaution to swedge a double cusp to allow for wear of mastication. When shell crowns are used make a double thickness of platinum, where dummies are attached to abutment (Fig. 8), for there is always torsion at these points, which are usually the weak points, and the points that give way in porcelain bridge work.

Abutments being made, impression taken and model run, our next step is to form a metal skeleton. For this use irido-platinum wire, 16 gauge (B. & S.), preferably round, for, if square is used, the sharp angles tend to cleavage of the porcelain.

The disputed question of saddles would take a whole paper by itself; however, I do not deem saddles necessary under ordinary circumstances, for we can almost always form a sufficiently strong frame work of wire.

Shape the wire on the model so that it will come as far rootwards as possible, not having it in the centre of the bulk of porcelain, thus weakening it (Figs, 9, 10 and 11). Extend the cross beam to the posts of abutments, or in case of shells, split wire, and extend each side of crown (Fig. 12). Fill the angle made by cross piece, and band with platinum solder to strengthen and overcome torsion. Now adjust facings; bring pins in contact with frame work; work wax to place; invest and solder pins when piece is ready to be built up to form with body, carved to articulation and baked (Fig. 13).

Fig. 18



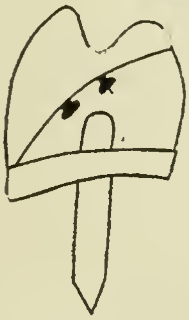


Fig. 17

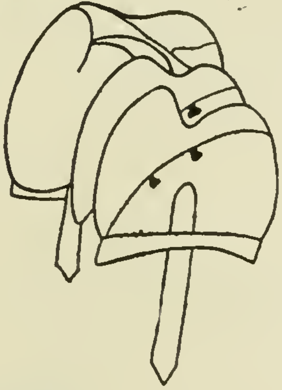


Fig. 19

Saddle bridges certainly are the strongest, not on account of the saddle itself, for the 32-gauge platinum in a span has little strength, but the strength lies in the bulk of porcelain thus obtained, for the saddle allows us to form our lingual contour most easily.

To a saddle properly constructed and accurately fitted to the tissues of the mouth, there can be no objection esthetically, hygienically, or mechanically, and may be used with permanent results.

To construct a saddle take an impression of the gum; make a die and counter die and swage saddle of 32-gauge platinum. Then trim, fit and burnish to the tissues of the mouth; do not attempt to make a saddle from a model alone. When it is bearing evenly all over and embedded slightly in the gum, trim so its edges fit accurately the bands of abutments, then take an impression with all parts in position, and solder bands to saddle. Now form skeleton work as before and fit facings. (Figs. 14 and 15.)

In regard to facings, I might say here that often plain teeth may be used, for thereby we "out-of-town" dentists can obtain

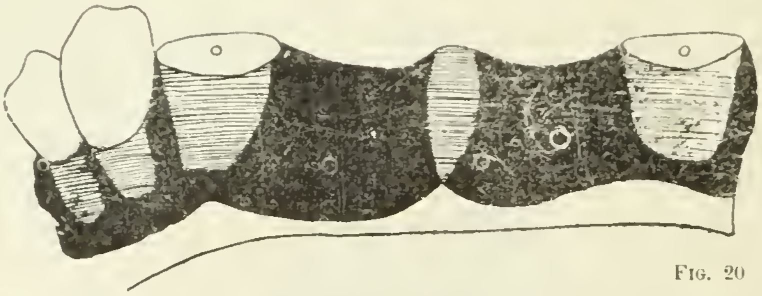


Fig. 20

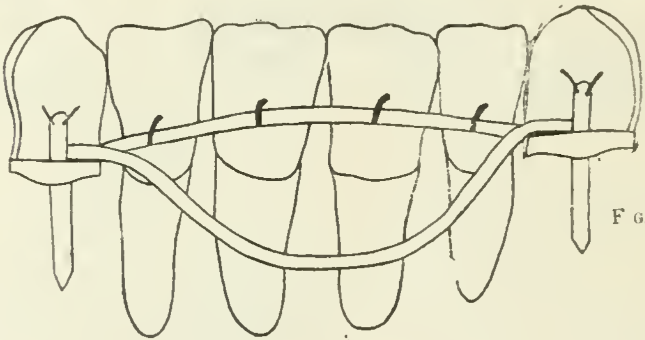


Fig. 21

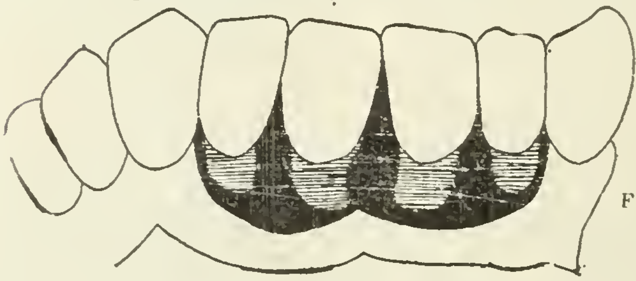


Fig. 22

shades without sending to the depots and waiting two or three days, thus avoiding much inconvenience and saving much time. To those who, at first taking up this work, do not feel competent to carve the cusps, a bridge may be made of porcelain by the use of saddle back teeth (Fig. 16). Grind them to articulation; fit to skeleton or saddle, and build behind them with body. (Figs. 17, 18 and 19.)

In anterior bridges, where there has been gum recession, a porcelain bridge may be constructed, and gum restoration made in a most artistic and natural manner. Having made abutments, metal frame work and saddle, if used instead of selecting ordinary facings, use those teeth with porcelain roots manufactured for continuous gum work. Grind these to position, and solder pin to skeleton. In building on the body join the necks of the teeth with a thin layer, and complete gum with pink enamel of desired shade; thus gum restoration is easy with but little carving. (Figs. 20, 21 and 22.)

Of the many bridges which our ingenuity will lead us to construct of porcelain, there is one more I should like to mention. It is where bicuspids are lost, often with considerable absorption of tissue. These may be restored by bar-anchored porcelain bridges. I will not dwell on these more than to mention them, for I have some diagrams here which will explain themselves. (Figs. 23 and 24.)

Next comes the question of bodies, and for this work only high-fusing body, should be used, for low-fusing bodies do not have the necessary strength.

Fig. 23

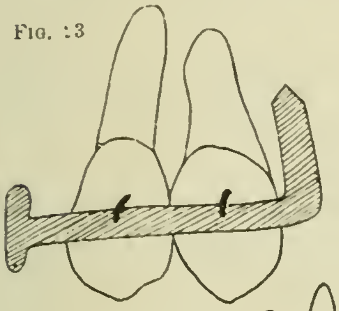
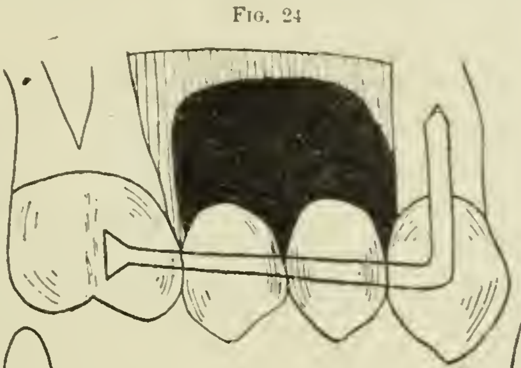


Fig. 24



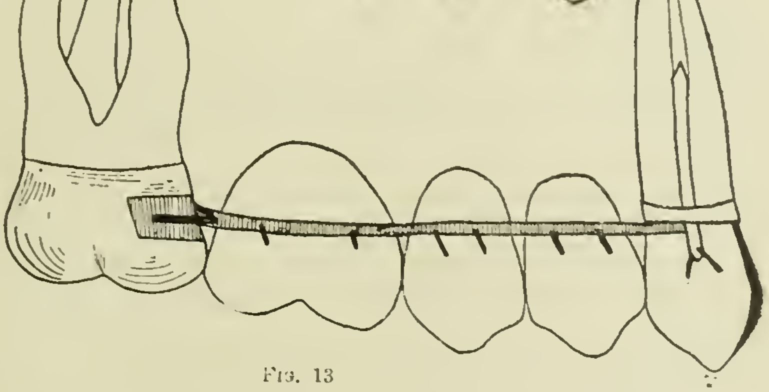


Fig. 13

Select those that you find by experience to be durable in color, hardness and strength, with the least tendency to porosity, and which has the greatest density. For crown and bridge work you will find Close's continuous gum body very reliable, but it is too coarse, and should first be ground fine in a mortar. Use a horn spatula for mixing the body on a clean glass slab, with clean distilled water, for absolute cleanliness must be observed, or your finished product will appear speckled and stained. Now, having all things clean with camel's hair brush and spatulas, work the body into all crevices and angles, then build up to contour, and as high as articulation, gently tapping from time to time to bring out all excess moisture absorbing it with bibulous paper till the body cuts like stiff putty, when you can carve to desired form and articulation; a little pink enamel may also be placed between necks of teeth.

In baking, porcelain shrinks about 1-6 its bulk, so allow for this when building on body. Be sure all excess moisture is absorbed and body comparatively dry, when we may proceed to the bake.

Two bakes are usually necessary, the first of which should be a biscuit bake, by which we mean that the porcelain will, when taken out of the furnace, have a granular appearance with small shining facets. Too much stress cannot be put on the fact that we must get a good biscuit bake, for if overfused, the next bake will be porous; if underbaked, there will be excessive shrinkage in the final bake. Do not try to determine a good biscuit bake by timing it, for oftentimes it takes longer than at others, so learn to distinguish it by experience and the eye.

In placing bridges in the furnace, I construct out of powdered quartz and plaster, a special tray for each individual case, so as to avoid tipping in the furnace.

One other point before leaving the subject of the bake. Porcelain contracts in baking toward its greatest bulk. This may be obviated by cutting a slit or cross in the centre of the greatest bulk in the biscuit bake, which will then cause it to shrink toward the margins. If this be not observed the result will often be a warped bridge.

Porcelain bridges may be set with cement, but preferably with gutta-percha. Saddle bridges should always be set with gutta-pecha. Have the apical end of the root hermetically sealed, then fit bridge before drying out canals. Dry and roughen canals with a cross-cut bur, and moisten with cajaput or eucalyptus. Do not heat post suddenly, but warm porcelain first or you may fracture it. Do not heat gutta-percha red-hot, and try to shove it up with one thrust, but slowly warm and gently press to place, removing frequently to trim off surplus.

The causes of failure in porcelain bridge work may be summed up as follows:

1. Lack of judgment in selecting cases (close bite, etc).
2. Improper biscuit bake.
3. Use of low-fusing bodies.
4. Use of gold as solder.
5. Insufficient frame work.
6. Too great bulk of frame work.
7. Placing cross beams too close to occlusal.
8. Extending cross beams only to cap and not to post of abutment.
9. Carving too deep sulci in cusps, causing cleavage by wedging.

Now, in conclusion, I would say—Do not become too enthusiastic and use in all cases, for porcelain has become "a dog with a bad name" in the past, simply because it has been used by dentists who did not leaven their enthusiasm with judgment, and our failure counts more against us than many successes do for us.

DISCUSSION.

By R. J. Husband, Toronto.

If the essayist has intended to exhaust the subject of porcelain crown work, a great deal remains to be said; but I take it he has alluded only to those used as abutments for bridge, hence it is not necessary to discuss the numerous varieties.

In regard to the porcelain crown described in the paper, I do not deem it at all necessary to solder the pins of the facing to the cap, but rather eliminate them altogether by grinding and concave that surface, thus affording greater attachment for and bulk of porcelain body. Sufficient stability can be given the facing by bending the post so that the facing will rest against it (see Fig.), and then putting a little moistened body at (1) the whole can be withdrawn, and conveyed to the muffle and biscuited, or a tiny piece of adhesive wax may be used to attach the facing to the post.

The posterior abutment crown can be made very strong by first adapting a platinum band to the tooth, and then striking up a seamless crown to telescope over it, and uniting with platinum solder. Gold solder can be flowed into the cusps after the bridge is baked.

In arranging the teeth or facings on a bridge, it is much better to sacrifice a pin here and there or altogether, in fact, rather than grind the wire frame to accommodate the pins.

All glazed surfaces to which porcelain is to be baked should first be either ground with a stone or etched with hydrofluoric acid. If anyone has scruples about the use of a complete saddle, good support may be secured by a small oval piece of platinum, large enough for a bicuspid to rest on, and placed transversely across the ridge under the centre of the bridge, and soldered to the frame.

The fusing of platinum solder is made very simple by using a cylinder of N_2O, instead of the bellows or compressed air. Attach it to the air-nozzle of the blow-pipe, and an S.S.W. tooth, or a small piece of pure platinum, can be fused in a few seconds.

Before placing either a crown or bridge in the muffle, it should first be laid on the platform at the mouth of the furnace, and left there until all extraneous matter is burned out. After the piece is fused it should be left in the furnace and the heat gradually lessened until the porcelain is cooled sufficiently for handling.

I am a strong believer in high-fusing bodies, using the lower fusing only for filling in little cracks consequent on shrinkage, or in little places here and there where strength is not a consideration.

I would like to add just here a few figures showing the comparative strength of high and low-fusing porcelain, as determined by rather exhaustive experiments by Dr. Le Cron, of St. Louis:

Loads in Pounds for Breaking.

Allen	3450
Close	5650
White's	3800
Brewster's	2540
Consolidated Con. Gum	3860
Whiteley's	2110
Brewster's Enamel	2690
Ash's High-Fusing	2760
Jenkins'	3350
Consolidated Inlay	2100

Dr. C. N. Abbott.—I think there are one or two points that were not emphasized sufficiently. Where gold is used in soldering pins to the posts, unless that gold is incorporated with the posting and the pins so that you can see no gold whatever, you will have trouble with bubbling. I have had a great deal of trouble with bubbling because I did not get rid of the gold. In grinding the porcelain you must be careful that the stones used have not been used on metal. If they have been used on metal some of it will get into the facing and we will have bad results. Great care should therefore be taken that the stones are clean. Another thing, in regard to posting the square post was advocated; I prefer the round for my own use.

Dr. C. E. Abbott.—With reference to the flux. This is something I have not heard of before. I do not consider it essential in soldering gold to platinum. The very substance used in the flux might cause the trouble. (Discussion of charts.) This work is comparatively new, and there is a great chance for success. Some men have had great success with the dowel crown. Others have found it a failure.

Dr. Eaton.—I did not hear the paper. I will, however, mention a point on the matter brought up in the discussion, viz., bubbling of the porcelain. For about two weeks, not long ago, I had a great deal of trouble with the bubbling of the porcelain in making crowns. I had great difficulty in discovering the cause. I brought the matter up at the meeting of the Toronto Dental Society, and in the discussion I got some points, but the mystery was not solved. I finally discovered that my laboratory man, after soldering, to make sure that the work was perfectly clean, boiled it in acid. I stopped the use of the acid, and have had no difficulty since. I use 25 per cent. platinum solder. I now take the precaution after soldering and washing, to put it in the furnace before building in the body. I think another cause of bubbling is found in the facings, which are sometimes porous and in grinding the little spaces are filled with particles of the stone, and when the heat is applied the bubbling results. I know no way of getting rid of these little particles except by discarding the facing.

Dr. Gordon McLean.—Mr. President and gentlemen: One point I would like to mention in regard to porosity in porcelain work is that this defect is often caused by grinding or trimming either porcelain facing or iridio-platinum posting or framework with dry corundum stones. These should always be kept very wet, and the piece washed thoroughly after to remove any remaining particles. For those who use solder in attaching the facing pins to dowels or caps I might suggest that the smallest part of solder needed should be placed between parts to be soldered when the pins are bent, the solder thus being firmly held in place before the case is heated up. This prevents the usual difficulty of placing and retaining a small piece of solder where it is required.

Dr. Mitchell.—I would just like to ask one question. Why is it that, in the construction of a bicuspid crown, Dr. Trewin is afraid to use anything more than one-sixteenth of an inch in the second pin for fear of the porcelain, while in the construction of this bridge he can use such a complicated system of platinum?

Dr. Cross.—I would like to ask Dr. Trewin if he has ever used the Davis crown baked to a platinum cap and dowel? It has, in my opinion, a great advantage over the facings backed up by lower fusing bodies. Being largely one homogeneous mass, your crown is much less liable to crush under great pressure as well as being much more translucent. In fact, I consider such a crown as nearly perfect as the hand of man can make it.

Dr. Mitchell.—I wish to congratulate the essayist, who is such a young man in the profession, and who presented to us such an excellent paper, and has clearly designated his own skill. You nearly all know I am strongly opposed to replacing tooth-tissue by any permanent structure, or by any structure that is not removable at the patient's will. It does not require much more labor to construct a bridge, the gum of which can be removed, and I feel that I have that bridge under my control. If you cover any large area with a permanent structure you are liable to trouble you cannot reach. That is my great objection to saddles, and replacing of the tissue by permanent structures.

Dr. Trewin.—Gentlemen, I must take exception to a view held by Dr. Husband, because I think all followers of soldering pins to the post know that they get greater strength. We know that the facing does not fuse, and it is only etched there at the best. Again, I think I spoke of square posting, and I think everybody will admit that it is much better than round. Regarding porosity, certainly there are things that will cause porosity, and we find ourselves at a loss to account for it after the precautions we have taken. If your biscuit bake comes out bad it is no use trying to grind out the holes and fill with a lower fusing body. Sometimes this will work, but it will leave a smudgy-looking job.

UNDERSTANDING BETWEEN PATIENT AND ORTHODONTIST.

By A. E. Webster, M.D., D.D.S.

Read before the Toronto Dental Society.

For some reason unknown to the writer nothing has ever come under his notice in reference to the relation between the orthodontist and the patient. If in any department of dentistry there is a necessity for a careful understanding of the personal character of a patient it is in orthodontia. So much depends upon his co-operation and his full understanding and appreciation of what is to be undertaken. As in the practice of medicine, so in orthodontia, a keen observation and correct interpretation of data is essential. The orthodontist must know his patient, and other things being equal, he who knows his patient best succeeds best. In general it is well to find out why the patient has consulted the orthodontist. Having settled that point, there are two ways of coming to an understanding—one, to allow the patient to go right ahead and tell all he knows about the subject in general, and his case in particular; the other, is to do most of the talking and explaining. The first is by far the best, because then the orthodontist knows what opinions are held, and may act accordingly. The most unsatisfactory patient to do anything for is the one who seems wholly indifferent to the case. There is no data to work on. In some cases, the second plan is the most satisfactory. By it matters may be very much shortened up. In about five minutes an experienced diagnostician will know whether it is worth while beginning a case or not. There ought to be an immediate decision as to the occupation in life, and a decision made as to the value of the operation to that person. I presume I have more consultations on orthodontia than any other dentist in Toronto, and no doubt I see fewer cases that ought to be undertaken. They come to me because the cases are difficult, the patients are old, unappreciative, and have no money. Here is a fair sample: A teamster about 40 years old, with protruding upper incisors and no lower first or second molars, was sent to me last winter to have his protruding teeth corrected. He hadn't cleaned his teeth or had a cavity filled in his teeth in ten years. Yet he would like to have the protrusion corrected. There were so many other things that he needed worse, that it would take five years to educate him to an appreciation of what he asked to have done. It is never wise to undertake a long, tedious operation for an unappreciative patient who has passed 20 years of age. Children may learn to appreciate what has been done for them. To put it plain, what sense is there in doing a long, tedious operation for a man who will never clean his teeth, or care for them in any way? Because we must admit that orthodontia is largely done for cosmetic reasons, and besides, if the teeth are to be soon lost from disease, why attempt regulation? In patients of maturity, the station in life can be judged, but not so in children. No one can foretell what may open up in life for a child. Many of our great men and women showed but few signs of greatness when young. Hence the necessity of undertaking even difficult and thankless operations for children. How often have we seen the distal surfaces of cuspids and bicuspid cavities of apparently unappreciative boys and girls filled with amalgam, only to be an eye-sore to them and their friends when they grow up. How frequently a dirty, bullying urchin, who later becomes a great man, has his first molars extracted because some dentist didn't think the lad's future was worth an effort. Above all things let us not be guilty of handicapping a man or woman for life by refusing to do the proper thing for him while he is young. If a patient does not appreciate the sacrifices that have to be made to have an operation performed, it is always well, after fully explaining what these may be, to send him away to think it over, to return when he has made up his mind to have the operation performed. Do not be over-anxious to begin a case; there will be troubles enough coming without courting them.

After having discussed the patient's fitness to have orthodontia performed, it is very important for the orthodontist to examine himself and see if he is the proper person to undertake such a case. After some experience, dentists, like those in other walks of life, recommend what they themselves can do. But for those beginning, no case should be tried unless it is fully studied, because there are no easy cases, and much attention and time is necessary to complete it. It may be confidently said that fully 90 per cent. of all cases of irregularity are due to bad dentistry, and the only way to improve our knowledge of dentistry is to improve our knowledge of orthodontia. If dentists do not know the value of each tooth to the whole arch, they will go on sacrificing them. How things change! It is no longer thought respectable to have a practice exclusively of extracting and making rubber dentures, but it is quite the correct thing to extract and put in bridges in some localities, in others to cut off good teeth that might be filled and put on crowns. And among a still better class of practitioners it is the proper thing to fill cavities in teeth, while among others it is thought wiser to give every effort to preventing decay and preserving every tooth so that there may be perfect features and perfect health. The time is coming, gentlemen, when there will be more time spent in college on the prevention of the loss of teeth than substitutions for them. Our whole effort to-day is one of substitution (like the cork leg manufacturer), rather than preservation. A grain of prevention is worth a pound of cure. How true this is in orthodontia. The history of orthodontia is the history of springs, elastics, wires, and nuts, rather than the study of embryology, histology, anatomy, and physiology. How can a deformity be prevented without a knowledge of its cause? There should be few, if any, irregularities among a dentist's own patients. I hope you do not think I have drifted from the subject. I hold that a dentist must know his own character and abilities as well as his patients.

The operation is to be performed. A quick judgment must be made of its character—how long it will take, how much pain, and the amount of fee. It is not wise to give definite answers to these questions at once, because they are dependent upon so many factors that are not readily seen and foretold. They all depend so much upon the patient's age, sex, anatomical structure, health, nervous irritability, desire to have it done, character of the friends, and honesty of the patient. To better judge of these things, make models of the upper and lower, and note the occlusion. If the facial lines need improvement, have photographs made, front view and profile—no retouching of defects. With this data at hand, the now all-important question is to make a diagnosis. Before a diagnosis can be made, there must be a thorough understanding of the normal functions and conditions of the body. There must also be in the mind of the orthodontist a classification of irregularities. Such a classification may be based on conditions as found, or better, on the etiology of the condition. The causes which bring about and maintain a deformity must be understood before any success can be expected in the correction of it. Remove the cause. There should be no mixing up of diagnosis and treatment. Think about one thing at a time. A diagnosis having been made, opinions may be expressed to the patient.

The patient is usually anxious to know how long the operation will take, and if there will be much pain. The question of pain may be dismissed by saying that there will be no pain, there may be some discomfort. The time, and to some extent the fee, will depend upon the age of the patient, the firmness of the anatomical structures, the difficulty of the case, and the co-operation of the patient. Though it is difficult to state definitely the length of time or the amount of the fee, yet an approximate of them must be given. There must be a free exchange of opinions between the patient and the orthodontist, so there may be no misunderstanding at a later date.

IMPLANTATION.

By F. D. Price, Toronto.

Here is a case that may be of some interest. I had not an opportunity before to get a skiagraph, as the man travels and is in Western Canada most of the time. The color of the tooth crown is slightly darker than when it was planted 4 1-2 years ago. It first belonged to a young lady and was removed because of pyorrhea. The root of the man's tooth had been abscessed until the alveolar plate over the root labially was gone. The socket was deepened a little and the tooth fastened by a splint for about six weeks. The alveolar bony plate is largely restored, and the tooth has been perfectly firm. The great contrast in color in the print may cause some of the bony alveolus to not be shown. There has been no retouching except to restore a little of the outlines of the tips of the crowns lost by the contrast. The pericemental membrane is shown in the right central, which is alive. The implanted root shows a little absorption of the alveolus at the extreme apex, due possibly to the point of the root filling protruding. I think I tried to fill the root from both ends with gutta-percha, and finish both ends with

gold. That was my practice. This may have had no gold at the apical end. The appearance is as though the alveolar bone is growing into the root about the end, and especially at the distal side. The negative shows the detail much better than the print, which is itself good for such a case.

Selections

EXPERIMENTS ON DISINFECTION.

The London County Council has issued a report containing the results of experiments conducted for them by Drs. Klein, Houston, and Gordon, in connection with the subject of disinfection. Both gaseous and liquid disinfectants were tested, the actual process of disinfection being, in the former case, supervised by Dr. Newman. Unvarnished or unpainted wood, cloth, linen, and wall paper were the materials selected for treatment. The organisms experimented with were: Spores of B. anthracis, human B. tuberculosis, and fresh cultures of B. diphtheriæ, B. pyocyaneus, B. choleræ Asiaticæ, staphylococcus, pyogenes aureus, B. typhosus. In the case of B. tuberculosis, human sputum rich in the bacilli was applied directly to the articles to be tested; in the other cases the organisms were first distributed in broth, milk, or melted gelatine, and the mixture then freely applied. After exposure to the action of the disinfectant, the material was examined in the laboratory. It was first immersed in sterile broth or water to remove traces of disinfectant, and then cultivated. When growths ensued they were identified microscopically by subculture and by animal experiment. In the case of sputum, the material was scraped off, distributed in salt solution, and injected into guinea-pigs. The results were as follows: Formalin Vapour: Thirty formalin tablets, each weighing 0.034 oz., were burnt in a room containing the infected articles, of 1,344 feet cubic capacity, with window, fireplace, and door sealed. The time of exposure was five hours. It was found that all the microbes exposed on linen were killed and, with the exception of anthrax spores, those on paper. In only three cases did the organisms on the wood and cloth survive. One of these was in the first experiment with typhoid; but as, in two later experiments, typhoid was completely devitalized, the investigators think the first result was due to some accident. Anthrax spores and tuberculous sputum provided the second and third cases of incomplete disinfection. Sulphur Dioxide: 3 1-2 lb. of sulphur were burnt in a room with a capactiy of 1,075 cubic feet. The articles were exposed to the gas for twenty-four hours. The sulphur dioxide failed to disinfect any of the samples of sputum, even those spread on linen and paper; it also failed to kill the anthrax spores on wood and cloth. All the other organisms it destroyed. Carbolic Acid: Infected material was soaked in 5 per cent. aqueous solution for twenty-four hours. In every experiment the anthrax spores survived; all other bacteria were killed. Condy's Fluid: Twenty-four hours' soaking in a solution containing a teaspoonful to the pint proved quite useless, and a solution five times that strength gave only slightly better results. The investigators suggest that the organic matter submitted with the microbes may have interfered with the disinfecting power of the fluid. Corrosive Sublimate: One in 1,000 solution destroyed all organisms in twenty-four hours. Bleaching Powder: In 1 per cent. solution this substance gave very poor results with one hour's exposure, somewhat better with twenty-four hours', but on the whole was only efficacious with the less resistant organisms. Somewhat exceptionally, however, it was more successful with anthrax spores than carbolic acid, destroying them on paper even in one hour. Special points brought out by the report are the difficulty of disinfecting cloth and unvarnished wood, and the unsatisfactory action of Condy's fluid and bleaching powder. For tuberculous sputum, phenol and corrosive sublimate were the only thoroughly efficacious disinfectants; formalin vapours did not destroy the bacilli on wood or cloth, and sulphur dioxide proved altogether ineffective. Both gases, however, were successful with B. diphtheriæ and staphylococcus pyogenes aureus.—*Ex.*

Proceedings of Dental Societies

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The Committee on Railroad Accommodations for the east have made arrangements for fast through Pullman service to St. Louis from New York with the Delaware and Lackawana Railroad. Two special cars will leave New York Tuesday, August 23rd at 10 a.m. The cost of the excursion, including berth each way, will be $35.50. A proportionate reduction is made for those going from Buffalo, Toledo, Fort Wayne, and cities on the line connecting with the Wabash Railway. To those desiring to go in the special cars, send notice to Charles A. Meeker, D.D.S., Secretary of the National Association, or to Guy Adams, General Passenger Agent of the Delaware and Lackawana Railroad. Accommodations have been secured for the National Association of Dental Examiners at the Franklin Hotel, north-west corner of Sarah and Westminster Place, with rates from $1.50 to $6.00 per day, European plan. Hotel first-class. Secure rooms by writing to E. C. Dunnavant, St. Louis Service Co., Seventh and Olive St., St. Louis, Mo.

CHARLES A. MEEKER, D.D.S., *Secretary.*

NORTHERN OHIO DENTAL ASSOCIATION.

The 45th annual meeting of the Northern Ohio Dental Association will be held in Cleveland, Tuesday, Wednesday, and Thursday, June 7th, 8th, and 9th. The programme is a strong one, and will be of exceptional interest to the general profession. The motto for the year is, "Annihilation of Pain in Dentistry." Essayists and clinicians have been selected with this thought ever foremost. The best authorities and the most successful men in this line of work will be at this meeting. The members of the profession are cordially invited to attend. It is expected that we will have the largest attendance of any meeting ever held in this section of the country. You cannot afford to miss it. COME.

W. G. EBERSOLE,
Cor. Secretary.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The next annual meeting of the National Association of Dental Faculties will convene at 10 a.m., June 9th, 1904, in Washington, D.C. The Executive Committee will be in session the afternoon of June 8th, to consider such matters as may be brought before it. Arrangements are being made with the railroads for one and one-third fare on the certificate plan. The hotel as headquarters, together with the railroad rates, will be announced later by circular letters to the colleges.

H. B. Tileston, *Chairman.*
S. W. Foster, *Secretary.*

FOURTH INTERNATIONAL DENTAL CONGRESS.

The Fourth International Dental Congress to be held in St. Louis, August 29th to September 3rd, inclusive, 1904, will convene in the Coliseum, a building most favorably adapted to the holding of such a gathering, and possessing accommodations so ample that all of the features of the Congress will be held under one roof and without interference one with another. This great structure occupies two blocks between Olive and St. Charles, and Thirteenth and Fourteenth Streets; it covers an area of nearly four acres, with a floor space for exposition purposes of 300,000 square feet.

The Coliseum is one of the largest and most commodious convention halls ever built, and is practically fireproof. It contains a large theatre capable of seating 2,500 people, which will be used for the general sessions of the Congress, and ten additional meeting-rooms, furnishing ample accommodations for the simultaneous meeting of the ten sectional divisions of the Congress; a large hall for exhibits, covering 9,000 square feet of floor space, practically all of which has been taken by intending exhibitors; and a well-lighted gallery for clinics, capable of accommodating the one hundred chairs which have been provided for that purpose. In addition to the foregoing, numerous committee-rooms, and telegraph, telephone, and postal facilities will be provided in the building, and it is expected that a well-ordered cafe will be in operation during the time of the Congress.

In connection with the building, and under the same roof, is the Coliseum proper, where 19,000 persons may be comfortably seated, exclusive of the stage, and it is anticipated that this audience-room will be used for one of the social features of the Congress, constituting an entertainment unique of its kind.

Besides the advantages of its ample accommodation for the Dental Congress, the Coliseum building has the advantage of being located in the heart of the business section of St. Louis, and at a considerable distance from the Exposition, so that the meetings will be less disturbed by the diverting attractions of the great Exposition than if the Congress were held within the Exposition grounds.

St. Louis and Its Surroundings.

The climate of St. Louis is temperate in summer and most delightful in the spring and autumn. The weather which visitors to the Louisiana Purchase Exposition may expect is shown by the "normals" taken from the records of the United States Weather Bureau. These "normals" are the averages of the temperatures at St. Louis during the thirty-three years that the Weather Bureau has had a station in St. Louis. The "normals," are as follows: May, 66.1; June, 75.4; July, 79.4; August, 77.6; September, 70.2; October, 58.7; November, 44.3. How closely the actual temperature for any one year follows the normal is well shown by the mean temperature for the month taken by the Weather Bureau at St. Louis during the past year. These temperatures are: May, 71.8; June, 74.2; July, 80.3; August, 76.4; September 66.4; October, 62.2; November, 63.3. The weather at St. Louis during October and November is particularly pleasant. It is the "Indian summer" of the Middle States.

Visitors From Abroad.

Extensive preparation is being made for the hospitable care and entertainment of all members attending the Dental Congress. The General Committee of Reception, aided by the local committees, is making every effort to provide for the comfort and care of all visitors. Dr. D. O. M. LeCron, Missouri Trust Building, St. Louis, Chairman of the Permanent Local Committee and Bureau of Information, will be pleased to answer all inquiries regarding the accommodations for those who desire to secure them in advance of the Congress. A sub-committee of the General Reception Committee has been appointed to meet and give information and direction to those arriving from Europe and elsewhere at the principal ports of entry of the United States, and to arrange the details of transportation from the sea-board to St. Louis. These committeemen will answer inquiries as to hotels, railways, etc. The sub-committees of the General Reception Committee for the principal ports of entry are:

New York—Drs. W. C. Deane, 114 E. 60th St., and Gladstone Good, 35 W. 46th St.

Philadelphia—Drs. J. D. Thomas, 1122 Walnut St.; Joseph Head, 1500 Locust St., and Julio Endelman, S. E. cor. Twelfth and Chestnut Sts.

San Francisco—Drs. H. P. Carlton, 62 Crocker Building, and P. D. Gaskill, Crocker Building.

New Orleans—Drs. J. J. Sarrazin, Godchaux Building, and R. H. Welch, Godchaux Building.

Baltimore—Drs. Cyrus M. Gingrich, 608 St. Paul St.; W. G. Foster, 813 N. Eutaw St., and B. Holly Smith, 1007 Madison Ave.

In other cities, not ports of entry, but which may be visited by members from abroad, the following committeemen will furnish all desired information:

Buffalo—Drs. F. E. Howard, 331 Franklin St.; C. W. Stainton, 47 N. Pearl St., and S. Eschelman, 421 Franklin St.

Chicago—Drs. T. L. Gilmer, 31 Washington St.; J. W. Wassall, 92 State St.. and W. V-B. Ames, 31 Washington St.

St. Louis—Dr. Wm. Conrad, 3666 Olive St. (Chairman Local Committee of Reception and Arrangements).

Washington—Drs. H. C. Thompson, 1113 Pennsylvania Ave., N. W.; W. E. Dieffenderfer, 616 Twelfth St.; Wms. Donnally, 1118 Fourteenth St., N. W., and W. N. Cogan, "The Sherman."

The following itinerary has been arranged for delegates from abroad desiring to make the trip from New York to St. Louis and return:

Arriving at New York, an opportunity will be offered to all who may desire to visit that Metropolis of America. Leaving New York on the N. Y. Central and Hudson River Railway by special train, Pullman coaches and dining car—if there should be one hundred and fifty or more in the party, otherwise by regular trains—at about 9 a.m., making a daylight run along the beautiful Hudson River, the Rhine of America, with the Palisades, West Point Military Academy (said by Prince Henry to be the finest military school in the world), and the famous Catskills, on the west bank; with Peekskill, Garrison, Rhinecliff, Poughkeepsie, and Hudson, thence to Albany, the capital of the Empire State, on the east—a distance of about one hundred and forty-four miles of probably the most enchanting and varied railway scenery to be found in the world. From

Albany along the Mohawk River, through the Mohawk Valley, one of the most picturesque and charming to be found in America, and replete with historic incidents; thence passing through Schenectady, Little Falls, Utica, Rome, and Syracuse, the great salt manufacturing city of the world. From Syracuse the route skirts the Erie Canal (upon which the State of New York is now expending in the neighborhood of $100,000,000 on enlargements), passing through Lyons, Newark, and Palmyra, prosperous cities of from fifteen to twenty thousand population each, thence to Rochester, one of the most important inland cities in the country, but interesting chiefly because of the Genesee Falls, the greatest in sheer descent of any on the American continent. From Rochester the route is through a section of the finest fruit belt of the Atlantic coast, passing Byron, Batavia, and Depew, arriving at Buffalo, the great electrical city of the world, about 7 p.m., where the night will be spent at the Hotel Iroquois, one of the great hotels of America. A side trip to be made the following day to the ever-beautiful Niagara Falls, twenty miles away, returning to Buffalo for dinner and lodging at the Hotel Iroquois. Leaving Buffalo at 8 a.m., via the Lake Shore and Michigan Southern Railway, famous for the fastest mail trains in the United States service, and also as the route of the "Twentieth Century Limited," running between New York and Chicago in twenty hours; the Lake Shore Limited, in twenty-four hours, and the twenty-six hour trains between Chicago and Boston. It is also the railway which, on October 4th, 1895, won the world's record for long-distance speed, making the phenomenal run of 510 1-10 miles in 470 minutes, or an average of over 65 miles per hour.

This route skirts Lake Erie, passing through Dunkirk, Ashtabula, Cleveland, Toleda, Fort Wayne, and Elkhart, arriving in Chicago at about 9 p.m., where the night and following day will be spent in seeing that most wonderful city. Leaving Chicago at 10 a.m. or 10 p.m., via the Chicago and Alton Railway, whose route for the first thirty miles is along the great Chicago Drainage Canal, a public work surpassing in magnitude and difficulties the building of the Suez Canal; thence to Joilet and Springfield, the capital of Illinois and the last resting-place of Abraham Lincoln, to Alton, arriving at St. Louis either at 6 p.m. or 7 a.m., depending on whether the time of leaving Chicago is in the morning or evening. At St. Louis the Hotel Jefferson is selected as headquarters for the Congress, with rates from seven to ten dollars per day, with bath, either for one, two, or three in a room, European plan—and reservations should be made not later than August 1st. Those desiring less expensive accommodations can secure them near the place of meeting by applying in advance to Dr. D. O. M. LeCron, Missouri Trust Building, St. Louis, Mo., U.S.A.

Returning, leaving St. Louis by way of the Pennsylvania Railway, the route is through Terre Haute, Indianapolis, Springfield, Columbus, Pittsburg, and Harrisburg, thence to Washington, the capital of the United States, where stop-over privileges have been secured for those who may desire to spend a little time in seeing the most beautiful and interesting city in America. From Washington through Baltimore and Philadelphia, where stop-over privileges have also been secured, and thence to New York.

The rate for the round trip from New York, exclusive of sleeping-car charge and subsistence, is $32.35. Arrangements have been made for any who may desire to return from St. Louis via the Big Four, Lake Shore, and Michigan Southern and the New York Central Railways to New York.

Those who desire to take advantage of this itinerary should communicate with Dr. Deane or Dr. Goode of the New York Reception Committee, notifying either of them of the date of arrival and by what steamship line.

Membership in the Congress.

The following are the rules governing membership in the Fourth International Dental Congress, submitted by the Committee on Membership, and approved by the Committee of Organization:

1. All reputable practitioners of dental and oral surgery who are entitled to membership in representative state, district, or local dental associations where they reside, are eligible for membership in the Congress.

2. The state conference committees in America, and the national chairman of each foreign country have authority to receipt for the membership fee, which, with the application for membership shall be forwarded to the Chairman of the Finance Committee, Dr. C. S. Butler, 680 Main St., Buffalo, N.Y., who will thereupon forward the official credentials conferring membership in the Congress.

3. If any difference of opinion arises in state committees or national committees as to eligibility of an applicant for membership, the question shall be referred to the Committee on Membership of the Congress.

4. The wives and children of the members of the Congress may be admitted upon special request, and by consent of the Committee on Membership.

5. A uniform fee of ten dollars shall be paid for each

membership, and each person whose name appears on the programme either as essayist or clinician must be a paid member of the Congress.

J. D. PATTERSON,
Chairman, Com. on Membership.

Kansas City, Mo., U.S.A.

Membership in the Congress will entitle the holder to all the privileges of debate and discussion of papers, and the right to vote upon all questions which the Congress will be called upon to decide. It will also entitle the members to participate in all the social functions of the Congress under the same conditions as enjoyed by others; to the official badges and insignia of the Congress; to one copy of the complete volumes of the Transactions, which it is anticipated will comprise not less than four volumes of about five hundred pages each. Judging from the material already offered, it is believed that the Transactions of the Congress will be the most complete exposition of modern dentistry yet published. This work will be sent to every member, whether he is able to be present at the Congress or not.

In order to avoid confusion and crowding of work at the last minute, those intending to apply for membership in the Congress are urged to send in their applications at once, which will give time to correct any error should one by chance occur.

All communications of a scientific nature must be submitted to the Committee on Essays for approval before final acceptance for a place upon the programme. All communications to the literary programme of the Congress from foreign countries must receive the approval of the national committee of the respective countries from which they are sent before they can be accepted by the Committee on Essays of the Congress. Each essay must be accompanied by a *résumé* giving the substance of the communication in an epitomized form, which must be in the hands of the Essay Committee thirty days before the opening of the Congress, in order to give opportunity for translation and printing in advance of the Congress, and in order to secure a position upon the official programme. All essays, titles of essays, and *résumés* thereof should be forwarded to Dr. Wilbur F. Litch, 1500 Locust St., Philadelphia, Pa., U.S.A., or to the Secretary of the Committee of Organization.

CLINICS.

All who intend to give clinical demonstrations should communicate with Dr. J. P. Gray, 214 N. Spruce St., Nashville, Tenn., U.S.A., Chairman of the Committee on Clinics, who will make the necessary arrangements and supply suitable patients as far as may be possible. The rules governing the approval of literary communications by the several national committees will govern also the clinical demonstrations, and all arrangements for clinical demonstrations must be completed by August 1st in order to secure space and a place upon the programme.

Exhibits.

All exhibits of a technical character relating to dentistry will be arranged for by the Chairman of the Committee on Exhibits, Dr. D. M. Gallie. 100 State St., Chicago, Ill., U.S.A., to whom all applications should be made for space. All exhibits relating to dental education will be provided for upon application to Dr. Truman W. Brophy, Marshall Field Building, Chicago, Ill., U.S.A., Chairman of Section IX.—Education, Nomenclature, Literature, and History.

Prizes.

The Committee of Organization offers two prizes, viz., a handsome gold medal for the best essay on any subject pertaining to dentistry, and a similar medal for the best exhibit of an archæological character illustrating the development of dental art. All essays in competition for the gold medal prize are to be forwarded to Dr. James Truman, 4505 Chester Ave., Philadelphia, Pa., U.S.A., Chairman of the Committee on Prize Essays, without the name of the author attached, and designated by a motto, accompanied by a sealed envelope containing the name of the author and bearing upon its outside a duplicate of the motto upon the essay. The committee, after having decided upon the respective merits of the essays, and after having selected that one deemed worthy of the medal, will open the envelope bearing the duplicate motto and announce the name of the successful author. The other communications will be destroyed *incognito* six months after the Congress closes unless return of the unsuccessful essays be requested by the authors thereof within that period; or, at the option of the writers, the competing essays which fail to secure the medal may be referred to the Essay Committee for presentation before the Congress. The successful prize essay will be published as a part of the proceedings of the Congress.

The awarding of the prize for the archæological exhibit will be made by a committee to be appointed specially for that purpose. All exhibits competing for this medal will be cared for by the Chairman of the Committee on Exhibits, Dr. D. M. Gallie, 100 State St., Chicago, Ill., U.S.A.

MEDAL.

The Committee of Organization has authorized the striking of a bronze medal commemorative of the Fourth International Congress. This handsome souvenir should be in the possession of every member of the Congress, as it is not only a beautiful work of art and intrinsically valuable as such, but it will be a memento of the greatest Congress of dentists ever held.

The figure upon the obverse side—that of St. Apollonia, which has been selected to typify dentistry—is one which not only serves the symbolic end, but one which lends itself particularly well to artistic treatment. The original design is an artistic representation which has both merit and beauty. The symbolism of the reverse of the medal has been given ample consideration, and it is such as should meet with general approval. The universality and international character of the Congress movement is typified by the continental divisions of the world. The associated dates at the top of the design are those which embrace the professional life-history of dentistry. Falling gracefully down between the continents is a scroll, upon which is to be inscribed the names of the recognized fathers of dentistry in all countries, each national body being asked to nominate the name or names to represent the respective countries. The pose of the eagle represents the auspices under which the Congress is to be held, and the palm branch a tribute of honor on behalf of the American profession to the fathers of dentistry.

The execution of the dies has been entrusted to the most expert die-sinker in America. The design is in high relief, and the medal will be struck in bronze, and will be about two and one-half inches in diameter. It will be a finished work of art in all respects, and an attractive and interesting souvenir of the great meeting which it typifies.

The medal will be supplied only to those who make application for it in advance of the Congress, as the number struck will be limited to the number subscribed for. The price of the medal without a case has been fixed at five dollars. Cases for the medal will be furnished at prices corresponding with their character and quality.

Those who desire to secure one of these souvenir medals will forward the amount of the subscription to Dr. Chas. S. Butler, Chairman of the Finance Committee, 680 Main St., Buffalo, and the medal will be sent before the opening of the

Congress. No medals will be available beyond the number subscribed for in advance of the Congress.

PRESENT STATE OF ORGANIZATION.

The Chairman of the Committee of Organization, through Senator Depew, has secured from Secretary of State the Hon. John Hay a promise to send through our foreign ambassadors and representatives an invitation on behalf of our government to all governments with which the United States is in diplomatic relation to send an official delegate to the Congress, and the Secretary has received notification that these invitations have been issued.

Upward of twenty nations have signified their intention to take part in this great Congress. No fewer than fifteen hundred committeemen are now actively at work promoting the success of the meeting. Every state and territory in the United States is in charge of a state committee actively at work in developing the details of the Congress in a local way. So that the prospect of an unusually large attendance is practically assured, and it is confidently expected that the membership in the Fourth International Dental Congress will be much in excess of any other dental meeting ever held. The number and character of essays already prepared, the number and character of the clinical demonstrations, the magnitude of the exhibits already arranged for, will surpass in these features all previous dental meetings. The work which has been accomplished by the Committee on Education, Legislation, and Dental History will constitute the most extensive contributions to these departments yet made.

The social features of the Congress are being provided for upon an elaborate plan. Receptions, lunches, and various forms of entertainment are being arranged on a scale commensurate with the magnitude and importance of the meeting, and as much time will be given to the amenities of social intercourse as may be consistent with the more serious features of the programme.

The Fourth International Dental Congress is now an assured success, and, judged from any standpoint, it will be a meeting which will not only adequately set forth the most recent developments of dental science and art, but it will constitute a liberal education in dentistry which no progressive practitioner can afford to miss.

An efficient corps of interpreters has been provided to assist those visiting members who are unfamiliar with the English language.

EDWARD C. KIRK,
Sec. Com. of Organization.

Meeting of the Committee of Organization.

At a meeting of the Committee of Organization of the Fourth International Dental Congress held in St. Louis, Mo., April 9th, 1904, the following action was taken:

In accordance with the understanding at the last meeting of the committee, held at Washington, D.C., February 23rd, 1904, that a Nominating Committee for the purpose of nominating officers for the Fourth International Dental Congress be elected at the next meeting of the committee.

Dr. M. F. Finley made the following motion:

"That a Committee on Nominations be elected at this time for the purpose of proposing names for the officers of this Congress and that Drs. A. H. Peck and W. E. Boardman, representing the Committee of the National Dental Association, and Drs. M. R. Windhorst and Wm. Conrad, representing the Committee of the Fédération Dentaire Internationale, be constituted the Committee on Nominations, to present nominations for the officers of the Fourth International Dental Congress, and that said nominations be presented at the present meeting of the Committee of Organization."

The motion was unanimously carried, and Drs. A. H. Peck, W. E. Boardman, M. R. Windhorst, and Wm. Conrad were elected as the members of the Nominating Committee.

At a subsequent session the Nominating Committee presented the following report:

Your committee begs to report the following nominations for officers of the Fourth International Dental Congress:

"*President*—H. J. Burkhart, Batavia, N.Y.

"*Honorary Presidents*—James Truman, Philadelphia, Pa.; A. H. Fuller, St. Louis, Mo.; G. V. Black, Chicago, Ill.; Thomas Fillebrown, Boston, Mass.; S. G. Perry, New York, N.Y.; Gordon White, Nashville, Tenn.; E. T. Darby, Philadelphia, Pa.; James McManus, Hartford, Conn.; G. A. Bowman, St. Louis, Mo.; H. A. Smith, Cincinnati, O.; T. W. Brophy, Chicago, Ill.; Wm. Jarvie, Brooklyn, N.Y.; Wm. Conrad, St. Louis, Mo.; M. R. Windhorst, St. Louis, Mo.; S. H. Guilford, Philadelphia, Pa.; J. D. Patterson, Kansas City, Mo.; C. C. Chittenden, Madison, Wis.; Wm. Carr, New York, N.Y.; E. H. Smith, Boston, Mass.; M. H. Cryer, Philadelphia, Pa.; E. A. Bogue, New York, N.Y.; V. E. Turner, Raleigh N.C.; A. L. Northrop, New York, N.Y.; S. A. Freeman, Buffalo, N.Y.; Wm. Crenshaw, Atlanta, Ga.; G. W. David, Corsicana, Texas; J. Hall Moore, Richmond, Va.; C. Newlin Pierce, Philadelphia, Pa.

"*Vice-Presidents*—A. H. Thompson, Topeka, Kans.; J. G. Reid, Chicago, Ill.; George Fields, Detroit, Mich.; Garrett Newkirk, Los Angeles, Cal.; R. Ottolengui, New York, N.Y.; R. M. Sanger, East Orange, N.J.; D. N. Rust, Washington, D.C.; N. S. Hoff, Ann Arbor, Mich.; L. P. Bethel, Columbus, O.; Jules J. Sarrazin, New Orleans, La.; Chas. L. Alexander, Charlotte, N.C.; C. H. Darby, St. Joseph Mo.; B. C. Nash, New York, N.Y.; G. S. Vann, Gadsden, Ala.; B. F. Luckey, Paterson, N.J.; E. R. Warner, Denver, Colo.; Wms. Donnally, Washington, D.C.; Frank Holland, Atlanta, Ga.; W. P. Dickinson, Minneapolis, Minn.; E. K. Wedelstaedt, St. Paul, Minn.; Adam Flickinger, St. Louis, Mo.; V. H. Jackson, New York, N.Y.; J. M. Whitney, Honolulu, Hawaii; B. Holly Smith, Baltimore, Md.; Louis Otoffy, Manila, P.I.; Cyrus M. Gingrich, Baltimore, M.D.; H. B. Tileston, Louisville, Ky.; J. F. Dowsley, Boston, Mass.; Geo. E. Hunt, Indianapolis, Ind.

" *Secretary-General*—Edward C. Kirk, Philadelphia, Pa.

" *Treasurer*—M. F. Finley, Washington, D.C.

" *Committee to Nominate Honorary Presidents and Vice-Presidents for Foreign Countries*—Edward C. Kirk, Philadelphia, Pa.; Edward H. Angle, St. Louis, Mo.; Wilbur F. Litch, Philadelphia, Pa.

(Signed) " A. H. PECK,
" WALDO E. BOARDMAN,
" WM. CONRAD,
" M. R. WINDHORST,
" *Committee on Nominations.*"

The above report was unanimously adopted.

It should be understood that the foregoing list of nominations is necessarily incomplete and subject to future correction and amendment, depending upon individual acceptances and the addition of new names. In its present form it represents the list of nominations corrected up to the date of this issue.

EDWARD C. KIRK,
Sec. Com. of Organization.

TORONTO DENTAL SOCIETY.

The Toronto Dental Society held its last meeting of the year on Tuesday night, May 3rd, at which the officers for the coming year were elected as follows:— Dr. G. S. Martin, Honorary President; Dr. Chas. E. Pearson, President; Dr. W. G. L. Spaulding, 1st Vice-President; Dr. G. A. Roberts, 2nd Vice-President; Dr. C. Angus Kennedy, Secretary; Dr. Badgeley, Treasurer; Dr. Martin, Archivist; Drs. Husband and Eaton, Councillors; Dr. A. E. Webster, Press Editor; Drs. Price, Grieve, and Trotter, Membership Committee; Drs. McDonagh, Kennedy, and McLaughlin, Dinner Committee.

CONFERRING DEGREES IN DENTISTRY IN ONTARIO.

At a special convocation of the University of Toronto, held in the Guild Hall, Toronto, April 29th, 1904, the Degree of Doctor of Dental Surgery was conferred upon the following candidates:

Bagshaw, Daniel Judson
Bedingfield, Howard Ernest
Black, James Edward
Brace, Harry Wilfred
Braddon, Morley Evart
Brown, Walter Norman
Brown, John Perrin
Butler, Thomas Elmer Clifton
Carruth, Robert Mills
Clarkson, Charles Howard
Conboy, Frederick Joseph
Corrigan, Charles Arthur
Davy, William Clark
Demille, Albert Colborne
Dent, Clarence Moise
Duff, James Robertson
Dunlop, Robert Albert
Edwards, Stephen Miles
Elliott, Theodore William
Ellis, Arthur William
Fife, Benjamin Otto
Freeman, Carman Joseph
Gilroy, George Frederick
Hamilton, Frederick Wilson Lewis
Hawkins, Morgan Stanford
Heath, Victor LeRoy
Hogan, Leonard Douglas
Hoskin, Hugh Alexander
Johnson, Arthur
Kenny, Edward Lane
Lappen, John
Little, Herbert Moore
MacGillivray, Robert Archibald
MacIntrye, Donald McMaster
McNally, Walter Hubert
Nethercott, D'Arcy Randolph
Noble, George William Keith
Proudfoot, Philip Bradley
Reynolds, Aaron Kilbourn
Robertson, Hatton Alexander
Sale, Charles Edward
Stanley, Leonard Ernest
Stewart, Archibald Alexander
Stewart, Robert Martin
Thomas, Mitchel Albert Ross
Walker, Abbie Llewellyn
Watson, Herbert Edward
Watson, Owen Clarence
Willard, Elmer Franklin
Wilson, Bertram Elmer
Wright, William Harrison

Sir William Meredith, the Chancellor of the University, presided over the ceremonies and delivered a short address to the graduates. Some of them, he said, would be going to the North-West, for he hoped that the emigration from the United States would not check the emigration of our own people into the West. He hoped that the better literary and scientific training which our young people received would have its effect.

The graduates going out from the university should impress upon the people of the Province their obligation to maintain the university in all its efficiency. The people only needed to be told to come forward to its support. The inadequate accommodation of the physics department was very regrettable and could not be overcome by any division of the students, for the worst economy was to restrict the work of the university. If economy and retrenchment were the rule, the work of the university would be encumbered.

A great wrong was done the education of the Province when one branch of the system was set up in comparison against another, and comparisons of cost made. No such cry should ever be raised, but loyal support given to all branches. Next year, he hoped, they would meet in the new Convocation Hall, to which the students had subscribed so liberally.

Immediately following the conferring of the degree of D.D.S. by the Chancellor, Sir William Meredith, the President of the Royal College of Dental Surgeons, Dr. H. R. Abbott, London, conferred the title of L.D.S. on all the above-mentioned candidates and the following in addition: Cas Oscar Fallis, Oliver Newton Leslie, W. M. Joseph Loftus, J. McDonald Sharpe and William Benjamin Halliday.

Rev. Prof. Clark, of Trinity University, delivered the doctorate address to the graduating class. He impressed the young men with the fact that they had not yet finished their education—in fact, it was just beginning. He illustrated his point by references to his own experiences in the church, and by pointing out that advances in science were so rapid that those who did not keep pace with them would soon fall behind in the race. Punctuality in appointments would make friends in every walk in life. Gentleness and courtesy were placed among the essential qualities of every one, but especially the dentist. He pointed out the difference between servility and courtesy, the one to be admired, not copied, but felt; the other to be shunned. He closed with good wishes to the graduates.

The Rev. Prof. Tracy closed the graduating exercises with prayer.

Directory of Official and Voluntary Dental Associations and Societies of Canada

OFFICIAL

Nova Scotia Dental Board.

President—Hibbert Woodbury, D.D.S., Halifax, N.S.
Secretary—Geo. K. Thomson, D.D.S., Halifax, N.S.

Prince Edward Island.

President—Dr. J. E. McDonald, Summerside, P.E.I.
Secretary—Dr. J. H. Ayers, Charlottetown, P.E.I.

New Brunswick Dental Society.

President—J. W. Moore, D.D.S., St. John, N.B.
Secretary—Frank A. Godsoe, D.D.S., St. John, N.B.

Quebec Dental Board of Examiners.

President—G. E. Hyndman, D.D.S., Sherbrooke Que.

Secretary—Eudore Dubeau, D.D.S., 396 St. Denis Street, Montreal, Que.

Board of the Royal College of Dental Surgeons of Ontario.

President—H. R. Abbott, D.D.S., London, Ont.
Secretary—J. B. Willmott, D.D.S., 96 College Street Toronto, Ont.

Manitoba Dental Association.

President—G. J. Clint, D.D.S., Winnipeg, Man.
Secretary—G. F. Bush, D.D.S., Winnipeg, Man.

North-West Territories Dental Association.

President—R. C. McLure, D.D.S., Lethbridge, Assa.
Secretary—P. F. Size, D.D.S., Moosejaw, Assa.

British Columbia Dental Association.

President—T. J. Jones, D.D.S., Victoria, B.C.
Secretary—Richard Nash, D.D.S., Victoria, B.C.

Yukon Dental Board.

President—A. J. Gillis, D.D.S., Dawson, Y.T.
Secretary—J. D. Bell, D.D.S., Dawson, Y.T.

VOLUNTARY

Canadian Dental Association.

President—J. B. Willmott, D.D.S., 96 College Street, Toronto, Ont.
Secretary—W. Cecil Trotter, B.A., D.D.S., 412 Bloor Street West, Toronto, Ont.

Maritime Dental Association.

President— —. McArthur, D.D.S., Truro, N.S.
Secretary—G. K. Thompson, D.D.S., Halifax. N.S.

Dental Society of Western Canada.

President—S. W. McInnis, D.D.S., Brandon, Man.
Secretary—C. P. Banning, D.D.S., McIntyre Building, Winnipeg, Man.

Ontario Dental Society.

President—A W. Thornton, D.D.S., Chatham, Ont
Secretary—Guy G. Hume, D.D.S., 228 Carlton Street Toronto, Ont.

La Societe d'Odontologic Canadienne Francaise

President—Joseph Nolin, Montreal.
Secretary—Eudore Dubeau, 396 St. Denis Street, Montreal.

Eastern Ontario Dental Society.

President—W. J. Gunn, D.D.S., Cornwall, Ont.
Secretary—W. B. Cavanagh, D.D.S., Cornwall, Ont.

Western Ontario Dental Society.

President—J. Mills, D.D.S., Brantford, Ont.
Secretary—C. E. Snell, D.D.S., Essex Centre, Ont.

Brant County Dental Society.

President—John Mills.
Secretary—F. Britton.

London Dental Society.

President—A. E. Santo, D.D.S., London, Ont.
Secretary—S. Campbell, D.D.S., London, Ont.

Elgin County Dental Society.

President—H. A. Way, St. Thomas, Ont.
Secretary—E. Wilbur Honsinger, D.D.S., St. Thoma Ont.

Toronto Dental Society.

President—G. D. Martin, Toronto Junction.
Secretary—W. G. L. Spaulding, D.D.S., Yonge Street Arcade, Toronto, Ont.

Montreal Dental Club.

President—C. F. Morison, D.D.S., 14 Phillips Square, Montreal, Que.
Secretary—F. W. McKenna, D.D.S., Montreal, Que.

The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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ANNUAL DINNER OF SENIOR CLASS OF ROYAL COLLEGE OF DENTAL SURGEONS.

It is worth while to notice the last act of each class of the Royal College of Dental Surgeons just before they go out to practise. The dinner gives the tired student a chance to relax. It is customary at such dinners to have several speeches from the faculty and outside members of the profession. Not so with the class of 1904. They did not need them. The graduates of 1904 are quite capable of taking care of that part of the entertainment. There were some notable speeches. Better professional ideals were set forth than many of their older confreres could understand. There seems to have been a mighty change come over the dental students of the past three or four years in reference to ethics. The students' journal has done more for this than any other factor. Higher professional ideals have been discussed in the journal and about college, until even those who have no ethical instinct will be ethical because of shame. A class of young men who can conduct a banquet such as that given by the class of 1904, is a credit to any profession.

CONVOCATION AT TRINITY UNIVERSITY.

At a special convocation held at Trinity University, May 6th, the degree of Doctor of Dental Surgeon was conferred upon the following candidates: Jones, who received the Cæsar gold medal; Greshman, H. Anderson, Howard Anderson, F. C. Husband, Ball, Jemison, and O. Martin. At the close of convocation, the graduates and their friends were entertained in the Provost's rooms.

Editorial Notes

A PRELIMINARY notice of the meeting of the Canadian Dental Association will be sent to every dentist in Canada within a few weeks.

WHOSE business is it to make the first move towards having the graduates in dentistry of the University of Toronto represented in the Senate?

THE Board of Directors of the Royal College of Dental Surgeons of Ontario met during the last week of April to conduct the business of the profession for the year.

Is there a dentist in Canada who has been so reckless as to already state that he will not attend the Canadian Dental Association meeting in Toronto, September, 1904? No, not one.

THE Legislature of Prince Edward Island has amended the Dental Law raising the matriculation standard as high as any of the other provinces, and authorizing the Board to negotiate reciprocal relations with any or every province of Canada.

IN hazing a student at the Dental Department, University of Maryland, injuries were inflicted from which he died. It is now up to the authorities and the Faculty to see that the parties who did the hazing are quickly given punishment to the limit.

ANOTHER meeting of the Board will be held during the meeting of the Canadian Dental Association in September to confer with the representatives of the other Boards of the provinces of Canada in reference to reciprocal relations in dentistry.

CANADIAN dentists who attend the International Dental Congress at St. Louis must have their credentials endorsed by the Canadian Committee: Chairman, H. R. Abbott, London, Ontario; secretary, A. E. Webster, 3 College Street, Toronto, Ontario.

A CORRECTION.—We regret that by some oversight in the discussion of Dr. Eaton's paper, published in the April number, Dr. Mitchell's remarks *re* the country practitioner were not recorded by the stenographer, and as a consequence Dr. Eaton's reply to them had but little connection.

THE exclusion of Canadian physicians who wish to practise in South Africa, shows the need of some arrangement among the medical councils and organizations of the Empire, under which all diplomas which guarantee a proper professional standing will be recognized in all parts of the Empire.

Dr. A. Primrose, who has so acceptably filled the chair of Physiology in the Royal College of Dental Surgeons for the past eight years, has resigned. He desires to direct his whole attention to anatomy and surgery. The faculty and the dental profession deplore Dr. Primrose's resignation. His successor has not yet been appointed.

At a meeting of the Programme Committee of the Ontario Dental Society it was thought advisable, owing to the meeting of the Canadian Dental Association, to advance the date of the Ontario meeting for 1905 from February to either the third week in March, and pool the attendance with the United Workmen, and thus get single-fare rate, or to the time of the Horse Show, 3rd week in April, when single rates are given. The matter is under consideration.

Our attention has recently been directed to the fact that the admixture of an equal quantity of Listerine with peroxide of hydrogen proves effective in maintaining the stability of the peroxide a much greater length of time than would otherwise obtain; and that mouthwashes of alkaline reaction should never be used in combination with peroxide, the alkalinity not only altering its chemical, but to a great extent destroying its antiseptic effect. At best, alkalies simply temporarily neutralize acidity, whereas a true antiseptic overcomes the conditions to which the acid-forming ferment is due.

Dominion
Dental Journal

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Original Communications

THE ADMINISTRATION OF ANESTHETICS BY DENTISTS.

By. C. N. Abbott, D.D.S., London.

Read before the Ontario Dental Society 1904.

In considering the subject of anesthesia, my particular desire is to awaken the dental profession from its state of lethargy and indifference, and to arouse its members to the duty which they owe to the general public in their capacity as doctors of dental medicine. It is a regrettable fact that dentists generally do not know all they should on this important subject. Unfortunately their college training anything but fits them for the intelligent use of general anesthetics, yet how few, even in the generalpractice of medicine, have occasion to use anesthetics to the same extent as the dentist. True, our students in attendance at college do listen to a few lectures on the subject, but what do they see and do clinically? Gentlemen, I take the position that the graduate in dentistry should be the peer of any medical man in the administration of all anesthetics. Not only this, but my own conviction is that it is high time we were giving our own anesthetics, rather than calling in a general practitioner for the purpose. If one has not a competent assistant, then another dentist should be called in to assist, and not be everlastingly acknowledging to our patients that we are not sufficiently educated, or lack the requisite skill, to attend them. Our students at college should be most thoroughly grounded on this subject, not only by lectures and quizzes, but they should, under competent anesthetists, have such practical demonstrations in the use of the more important anesthetic agents as would thoroughly fit them to practise the intelligent application of these drugs. They should have good practical training in physical diagnosis, such, for instance, as would render them capable of determining as to the advisability of administering an anesthetic in the individual case, the preferable drug to use, and as to the dose that could be given with safety. This is not only necessary, but absolutely essential, if we are to have dentists trained to be skilful anesthetists. I would, perhaps, not go as far as to say they should be skilled diagnosticians, but they certainly should be able to differentiate between a condition of health and disease, to know when something is wrong, to know a murmur when heard, where to listen for one, and how to know when the breathing departs from normal, etc.; in other words, to have a good working idea of the organs concerned. Practical training should be given in hypodermic medication, the drugs found to be useful and their indications. Artificial respiration should be demonstrated in its several methods, together with the treatment of shock, syncope, asphyxia, etc. These should not only be taught, but our students should be made entirely intimate with every detail by practice. Our graduates should be so familiar with this subject that they would be equal to any emergency of practice, that they could take the moral as well as the scientific responsibility of any case entrusted to their care. The careful study of this subject in college is rendered the more necessary by the fact that graduates generally are content to drop both books and study in the active pursuit of practice. This seems most deplorable, but yet it is nevertheless true, and for this very reason, if for no other, students in dentistry should be graduated with an intimate and thorough knowledge of the use and application of anesthetic agents, together with a thorough drilling in such measures as are used in the treatment of accidents.

It seems to me that about the only agent the generality of dentists have anything to do with is nitrous oxide, and I believe this is due to the fact that most any tyro can administer it with impunity. Yet even this is given in many offices in the most haphazard and unscientific way, simply because as students proper education has been sadly lacking.

I am quite aware there are many eminent men in dentistry who hold views diametrically opposed to myself, and would hold up their hands in holy horror at the thought of personally administering chloroform or ether. This, I believe, is largely due to the fact that they have never used themselves to the practice, and my honest belief is, if they had as students thorough training in college on the subject, and had started on their careers with the knowledge of competency, they would hold different views to-day. Remember, I would not be understood as advocating the use of these drugs by any, excepting those who, by careful study and clinical experience, had thoroughly equipped themselves to cope with any emergency. But I do think it the duty of every progressive dentist to be a competent anesthetist.

To use the expression of a prominent educationist: "Sentiment alone, though having no place in scientific study, has sufficient historical relation to this subject to justify a more thorough education." Who discovered the practicability of anesthetics? Morton, a dentist. What manner of man was he who seized opportunity, presenting in the form of Eben. Frost with a painful molar, to demonstrate that though the nepenthe of Homer might be mythical, "science has control of pain"? Morton, a dentist. For without discussing the claims of anyone to the right of discovery of anesthesia, we may quote Sidney Smith to the effect that, "He is not the inventor who first says the thing, but he who says it long, loud, and clear, that he compels mankind to hear him." In this sense at least Morton's title is clear, and supersedes the earlier observations of Wells. Did he not succeed where the latter failed, at the same place, and before practically the same audience, rendered cynically antagonistic because of the previous failure? Thus the historical interest associated with this subject gives every true dentist an incentive for the study of anesthesia. My firm and positive opinion is that it is the duty of our college board to take this matter into their very serious consideration. It appears to me about time a radical change was made in our teaching. The young men of to-day are not going to be content with the knowledge of their predecessors, they want more than a smattering on this subject. If it is worthy of attention at all, the teaching and practice certainly should be comprehensive. A little knowledge is a dangerous thing—drink deep, or touch not the Pierian spring—and should not be tolerated by progressive men. Let us be up and doing, and rise above a narrow specialism. We, as dentists, should know as much and more than any general practitioner on every subject which will benefit us in intrepreting and treating diseased conditions as they are presented to us.

Let us briefly consider some of the details that mean much in the successful use of anesthetics. To begin with, the administrator should ever have a cool head; he must be able to think and act quickly and quietly. He should not be afraid of his drug, but should manifest a wholesome respect for it. The patient should be properly prepared for the operation, regardless of the drug to be used. How often do we witness a patient sitting in the dental chair in an upright or semi-upright position, with no atention having been paid to preparation. I am sorry to say this is altogether too general a habit with the profession, and yet, from a physiological standpoint, can you very well imagine anything more unscientific. In the use of most anesthetics, if not all, your patient's vital organs are put to a strain, the circulation is weakened, and, owing to vaso-motor depression, there is great danger of stagnation in the large veins of the abdomen and extremities, and the resultant, a bloodless or anemic condition of the brain centres. We also have a weakened respiration, as result of interference in circulation.

It is about time we as dentists should adopt a more proper position for anesthesia. Whoever heard of the general surgeon operating in any position but the recumbent, or at least where the head was as low or lower than the extremities. There is positively no excuse for the upright or semi-upright during the exhibition of anesthesia in dentistry. Unfortunately, our chairs, as generally manufactured, are not adapted to the anesthetic position. There is only one chair on the market to-day that I know of which is suitable for the general purposes of a dentist. We want our chairs made so that a perfectly horizontal position can be reached, that they can be tilted to a proper position in cases of emergency. With a patient in the full recumbent position, there is much less liability to accident in the operations for extraction, while the convenience in operating is proportionately increased, and the liability to fracturing teeth roots or alveolus is greatly lessened. With the operator standing to one side of the head, while working on the superior maxilla, and a position directly behind the patient's head for work on the inferior maxilla, we have the best conceivable command of the situation. In adopting the recumbent position, the danger from administration is markedly lessened, the danger from teeth or roots slipping into the larynx is reduced to a minimum, also there is much less danger of smothering your patient from the hemorrhage, as the blood is readily drained from the mouth by throwing the head from one side to the other.

As regards preparation, if possible your patient should not partake of food for three or four hours previous to the operation. This last meal should be made up of something light, readily digestible, and nutritious. A small dose of brandy given a short time before commencing is useful with many, particularly where there is noticeable weakness; it lessens nervousness. In the highly excitable, a hypodermic of morphia is often very beneficial, it will make them more amenable. In using an opiate care must be exercised, as the pupillary reflexes are apt to be interfered with to a greater or less degree. However, they act happily in lessening stage of excitement and quantity of anesthetic, they will also steady the heart. Most careful attention must ever be paid to the pupillary reflexes. Do not forget that a dilated pupil, reacting to light and associated with preserved conjunctival reflex means anesthesia is not complete, that a contracted pupil reacting to light and without conjunctival reflex, means moderate anesthesia; that a contracted pupil, not reacting to light and with lost reflex, is indicative of dangerous profound anesthesia. In using chloroform, it is advisable to precede this drug by a hypodermic of belladonna, or its alkaloid, atropine. This is the very best vaso-motor stimulant we have, and as the principal danger we have to contend with is a lowered blood pressure, the manifest advantage of atropine is obvious. All articles of clothing must be absolutely loose, a tight garment of any kind must not be tolerated, either about the throat, chest or abdomen. Foreign substances, such as a denture, tobacco, etc., must be removed from the mouth. To avoid embarrassing consequences, it is advisable to have the bladder empty. Now, with your patient in a proper position, a careful examination should be made of the character and force of the pulse. This, together with the action of the heart and lungs, must be carefully noted. There is not enough attention paid to the condition of the pulse and the heart's action before operation, by which to compare the work during anesthesia, and after operation, and this neglect often leads to unnecessary stimulation and overdriving a heart which is doing its average best.

In an operation of selection, best results are obtained by timing the work for the early hours of the morning, as at this time the light is better, and also your patients should be at their best physically after the night's rest. It is not wise to allow any strangers in the operating room. I at one time used to permit a friend to be in attendance, just to satisfy the whim of the patient. I have had to give it up, however, as I often had more trouble with the friend than I did with the patient. If at all possible, we should have a competent assistant in attendance. All instruments and appliances likely to be required should be made ready, and put to one side, readily accessible, but out of sight of patient. The operating room should be well ventilated and warm. A temperature of at least 70 degrees F. should be maintained. This is rendered necessary by the fact that, under anesthesia, body heat is greatly lessened. I think it wise to talk but little, and then quietly and reassuringly. In other words, our effort should be to keep from anything that would be likely to cause excitement. Any man who makes a practice of giving anesthetics, no matter what kind, should provide himself with the necessary instruments and appliances to properly cope with accidents. If this is not done, one is culpably negligent. There must be ready to hand, and in good working order, one or more hypodermics, tongue forceps, or tenaculum, and an efficient mouth-gag, also oxygen, and such drugs as strychnine, atropine, digitalis, ammonia, ether, amyl nitrate, adrenalin chloride, brandy, etc.

Personally, I never give an anesthetic of any kind without making preparations for an emergency, which, though fortunately rare, do occur at times, and often when least expected. I always make a point of having my hypodermic charged with a solution of one-thirtieth of a grain strychnine, which is perhaps the best cardiac stimulant we have. I also have my other solutions ready to hand. I might add that adrenalin chloride is now considered by many as even superior to strychnia; in the few instances I have used it the results have been good. I am satisfied that if I had not made a habit of preparing myself for emergencies, I should have had to answer for more than one death during the course of my practice. Not less than eight weeks ago, while administering nitrous oxide in my office a rather peculiar accident occurred. My patient, a young woman of 23 years of age or thereabouts, and in good, robust health, applied to me for relief from an annoying neuralgia caused by an impacted third molar. The anesthetic was given as usual, and without unusual incident, the operation completed perhaps half a minute, and, while washing my hands directly beside the patient, my attention was suddenly attracted by a slight gurgling noise. To my amazement, the patient's face was about as black as your boot, breathing stopped entirely, and there was but the slightest flicker of the heart. I immediately got into action, grasped the tongue with forceps, and drew it well out, at the same time raising the chin forward and upward; by doing this I freed the epiglottis. I then noted some obstruction in the fauces, which I removed, and which afterward proved to be a large bolus of undigested food. My next resort was to a heart stimulant in the shape of a hypodermic of strychnia, one-thirtieth of a grain, which I had repeated in fifteen minutes. I then started vigorously to work at artificial respiration, my assistant meanwhile performing rhythmic traction on the tongue to stimulate the diaphragm and respiration. After working about half an hour, the patient, much to my relief, began to mend, and in a short time was out of danger, and wondering somewhat at the dishevelled condition of her hair, etc. Gentlemen, I think this little experience carries with it its own moral, and I am sure it must emphasize to you the absolute necessity of being ever on the alert for danger signals, and to have close to hand the necessary instruments and remedial agents for resuscitation.

Another matter that must ever be borne in mind is that a patient recovering from an anesthetic is to a greater or less degree suffering from shock, and should invariably be kept in the recumbent position for some time after the return to consciousness. I have had good reason to remember this fact owing to some unfortunate experiences. As a general thing, we are perhaps in too great a hurry to dismiss these cases. Doubtless many of you have had considerable trouble with nausea, either as an after-effect or during the course of anesthesia. The active irritant often proves to be blood swallowed during the operation, A fact that must not be lost sight of is that vomiting during anesthesia is dangerous in any case, owing to the great cardiac weakness which precedes and follows it. I might say that if the position I have suggested is used, you will have much less trouble from vomiting, as very little, if any, blood is swallowed.

In cases of persistent nausea, I have found good results follow the use of drop doses of nux vomica every ten minutes, or carbolic acid or wine of ipepac. may be substituted. More active measures, such as blistering the epigastrium or the hypodermic use of morphia, may be used if the first drugs prove ineffective. Of course, it is understood that, if blood is present in the stomach, we must use means to get rid of it.

Now, in conclusion, let me urge upon the members of the profession the desirability, I might almost say the necessity, for a broader conception of our specialty of the healing art. The man who limits his life-work to operative and prosthetic practice, is but one half a dentist; a much wider culture is demanded of the successful man to-day. A good general knowledge of medicine is positively essential to us. Our energies have been devoted too much to the art, to the great neglect of the science in dentistry. That which would add to the broadening of dental education should be joyfully accepted by all earnest minds in the profession. We should remember that no practitioner can isolate one organ, set of organs, or function from the body, and say, This I will consider, and nothing more; this one disturbance do I find; the rest of the body will take care of itself. We must recognize more and more that there is an indissoluble connection between all specialties; they are essentially interdependent. A man cannot be an ideal dentist without a thorough knowledge of the principles of the art of his colleagues in medicine, no matter on how restricted a basis he may construct his practice. Our ideal dentist should be a highly cultured man, thoroughly capable of treating, either medicinally or surgically, locally or generally, such lesions as are found in the oral cavity and adjacent parts.

Discussion.

By J. E. Wilkinson, Petrolia.

I think that Dr. Abbott is to be congratulated on the very well-written paper which he has just read, and for some of the excellent suggestions which he has thrown out.

The history of anesthesia, to my mind, forms one of the most interesting chapters in the history of dentistry. The most brilliant modern achievements in the direct saving of life and the relief of pain have been rendered possible by the discovery of anesthesia. When we remember that anesthesia plays a much more important part in a dental than a medical practice—unless engaged in surgery—how important it is that the practitioner should have a thorough knowledge of their intelligent use and their contra-indications, together with a sufficient knowledge of physical diagnosis to enable him to meet any emergencies of cardiac or respiratory diseases. There is only one way for us to gain this knowledge and that is by clinical experience. We should familiarize ourselves with the normal heart as to location, size, rhythm sounds, etc., thus enabling us to recognize pathologic conditions when present. This will assist us in the choice of an anesthetic, and in the treatment of complications that may arise. The medical journals of the day are clamoring for the necessity of a greater amount of clinical instruction on anesthesia in the medical schools. Should not we as dentists urge this matter where the necessity is even greater. I agree with the essayist that the dental graduate should know as much as any medical man in the administration of anesthetics. The giving of all general anesthetics by dentists is simply a matter of, Are you competent? and not Will the law allow you? We are not limited by any law that I know of in either the Dental or Medical Act of Ontario, and these facts are borne out by the opinion of the late Hon. David Mills, Minister of Justice of Canada.

I do not take it that the paper is written in a spirit of harsh criticism, but rather as a plea that the more comprehensive study of anesthesia should not be overlooked in the broad, progressive spirit which should characterize the dental profession.

As to the relative value of the different general anesthetic agents, very little or no comment is made. A number of suggestions have been made as to chloroform, but no mention is made as to ether, and very little of nitrous oxide. I think, however, after making reference to chloroform, it would have been well to have gone into the relative value of ether and nitrous oxide, the two general anesthetics which, I believe, as a general rule, should have the preference in most operations by dentists.

In the administration of chloroform, Dr. Abbott recommends a hypodermic of atropine to control lowered blood pressure. Dr. H. C. Wood, of Philadelphia, has demonstrated that atropine injected into the jugular vein of a chloroformed animal altered the rate of the pulse, but had no apparent effect or influence on arterial blood pressure, or upon the respiration, and in no way prevented final cardiac arrest.

Of all drugs, digitalis is by far the most powerful in stimulating the failing circulation; next, or perhaps equal to it, is strychnine, because, while having decided influence on circulation, it has also decided influence on respiration.

In the preparation of the patient and the after-treatment, the essayist has gone pretty fairly over the ground. There are one or two points, however, worth considering. After the administration of ether, the recovery is often prolonged, and it is absolutely necessary that the patient be carefully watched during this time. As a general rule, the anesthetizer should not leave his patient until the return of consciousness is so far advanced as to permit the patient to clear his throat. The danger of septic infection of the lungs by the inspiration of the stomach contents, by an unconscious patient, should not be under-estimated; also the danger of strangulation by the lodging of a fragment of undigested food in the larynx. The latter danger is, of course, obviated, and the former lessened, by the careful preparation of the patient for the ether. The tendency to vomit can be decreased, and vomiting checked in many cases by the use of vinegar or dilute acetic acid. It should be poured on a piece of gauze, and held before the patient's face, so that the vapor is inhaled. Vomiting before the patient has regained consciousness should be treated as during anesthesia. The head should be turned to one side, and, if necessary, the jaw brought forward, and the mouth opened. The patient should also be guarded from taking cold as their relaxed condition renders them more susceptible. To sum up in just a few words the treatment of accidents during anesthesia: Have at hand strychnine, digitalis, and ammonia.

Give tr. of digitalis hypodermically. Draw out the tongue and raise the angle of the jaw, and see that there is no impediment to respiration. Invert patient promptly.

Resort to artificial respiration immediately. Apply warmth to the surface in protracted cases. During the continuance of anesthesia, the safety of the patient must always be the chief consideration, and must be the guide in the choice of an anesthetic. There are two sources of danger that should not be confused in estimating the clinical value of the different anesthetic agents. Those due to the drug, and those resulting from its administration by the average anesthetizer, bearing in mind that more than one-half the anesthetics are administered by men with very little experience.

Nitrous oxide is by far the safest general anesthetic we have. It produces loss of consciousness, not by value of any inherent property, but simply by shutting off from the nerve centres the supply of oxygen. Sometimes during the administration of nitrous oxide, the rise of arterial pressure is abrupt. Great caution should, therefore, be observed in its administration to persons the coating of whose arteries is diseased, and it is probable where widespread atheroma exists, chloroform is safer than nitrous oxide. When respiration has been suspended in nitrous oxide anesthesia, artificial respiration is, therefore, the true indication.

When a general anesthetic must be employed, and the operation cannot be done under nitrous oxide, ether carefully administered fulfils the indication more perfectly than any other drug. The stimulant action of ether upon the respiration and heart has a marked advantage over chloroform, with its depressant action in these cases. Ether should be employed in preference to chloroform in every case in which it is possible, and where properly administered, will be found to have very few contra-indications. There are very few patients, and very few operations, in which it cannot be given satisfactorily, and especially so if preceded by the administration of nitrous oxide.

As to the position of patient during anesthesia, Dr. Abbott claims that the recumbent position should invariably be adopted during administration of all anesthetics. He says: "There is positively no excuse for the upright or semi-upright position during the exhibition of anesthesia." This assertion certainly holds good with regard to chloroform always, and to emphasize this point more strongly, the patient after being anesthetized should, under no circumstances, be changed to the sitting posture, as this may easily lead to syncope. A sudden change to this position probably accounts for many deaths from chloroform. The recumbent position tends to a certain extent to overcome a fall in blood pressure. No operation for the extraction of teeth under chloroform should ever be commenced until the patient is entirely under its influence. With nitrous oxide and ether,. the lighter degrees of narcosis very often answer, but with chloroform it is necessary that all nerve influences be completely abolished to avoid abnormal reflex action. It is said the fifth pair of nerves are particularly prone to influence the heart injuriously, and often fatally, through vagi in the lighter stages of anesthesia by chloroform.

The sitting posture, however, can be maintained with safety throughout the entire operation if ether or nitrous oxide be used. There should be no serious objection to the use of ether in the sitting posture, as there is no contra-indication to its use in this position. With regard to nitrous oxide, the correct position is the sitting posture. The patient should be allowed to assume a comfortable and unrestrained position, and his head should be permitted to retain its natural position in relation to the body, being neither flexed upon the chest, nor extended towards the spine. Owing to the depressant action of chloroform on the vasomotor centre, fatal syncope results from the dilatation of the capillaries, and the withdrawal into them of the blood from the cerebral centres, whereas ether and nitrous oxide act as stimulants on the respiration and the heart.

Ether is not a depressant except when given in poisonous overdoses, and kills by its toxic action on the respiratory centre.

In nitrous oxide death is caused by primary failure of the respiration, respiratory failure being caused by an exaggeration of the obstruction in the air passages, shown by the loud stertor, due to deprivation of oxygen; and also by spasm of the respiratory muscles.

In referring to the examination of the patient previous to administration, the essayist says: "Now, with patient in proper position, a careful examination should be made." I think it would be well to make the physical examination before placing the patient in the operating chair. The patient will almost certainly be somewhat nervous, the heart will beat rapidly in consequence, and abnormal murmurs will not easily be detected. All examinations of the patient should be conducted quietly and with tact, as otherwise he may be unduly frightened, and more harm than good will result. In conclusion, I wish to thank the members of the committee for doing me the honor in asking me to open the discussion on this important subject of anesthesia.

Dr. Sparrow.—With reference to a dentist administering chloroform. I would like to ask, Can we legally do so as far as our practice is concerned?

Dr. Abbott.—Yes, we are allowed to give chloroform. I made special inquiries of the Hon. David Mills, and learned that we are legally authorized to administer chloroform in our practice.

Dr. H. R. Abbott.—There has been much reference made to the extension of the curriculum and to teaching more of it at the college. I must say that this has met with the serious consideration of the board, but the board was always met with the statement that they had more than they could attend to in three years. Now at our last meeting we consulted with Dr. C. O'Riley and Dr. Teskey about attendance of students at the hospitals, etc., and they promised to study out the question. In accordance with Dr. Abbott, I think that the dentist should be able to administer the anesthetic and operate at the same time. Still I think we should call in a fellow-practitioner. Why do they want to call in the family physician? Because they think that he knows more about it than we do. But we know just about how much they know about nitrous oxide. Now, gentlemen, you know how I appealed to you to attend the Canadian Dental Association. Now I want you to go further and attend the Fourth International Congress. Canada has been paid the compliment of being set apart as a separate nation. They at first did not want this, but they have done so very generously, and have invited the Canadian Dental Association to name their clinicians and essayists. The Canadian Dental Association has appointed a man in each province to look after the interests of the International Dental Congress, and anyone who is in good standing in the Province of Ontario will have to apply to Dr. Webster.

Dr. Flemming.—In the country towns the average medical man sees very little of chloroform cases except in the dental office. Therefore the dentist has more to do with it than the physician, and it is in the interest of the public that the dentist should administer chloroform or any other anesthetic that is used. From a financial point of view I would rather see a medical man do it, but I think it is proper for the average dentist to administer the anesthetic.

Dr. Irwin.—I am very much pleased with the papers. The precautions mentioned were timely. I think that the horizontal position is advantageous for the extraction of teeth and also for the administration of nitrous oxide.

Dr. McLaughlin.—I appreciate the papers very much, and congratulate the two essayists. One point I wish to emphasize, that is, the proper preparation of the patient before the operation. In addition to other precautions, the intestines should be emptied. This will prevent a great many difficulties, among others that of nausea.

Dr. Seccombe.—I am very much pleased with the paper, and with the idea of calling in another dentist. It is a good idea, as it tends to increase the confidence of the people in the dentist. It is a great mistake to administer the anesthetic yourself if you are going to perform the operation. Medical men do not like to do it. All my experience with chloroform has been in the dentist's chair. Another thing, I prefer to go to the patient's home to administer the anesthetic, or take the patient to an anesthetist's office. Thus we avoid the trouble of having the patient in the office a long time, and also the odor of the chloroform.

Dr. Reid.—The medical student is really not very well qualified to give an anesthetic, because they are not sufficiently instructed in this line in their college. This accounts for the timidity of some of them to administer it. They have not had enough practice, and really know very little more than the dentist when he graduates, so we have just as much right to administer an anesthetic as the physician. They have to put in an extra year or two as a house-surgeon in a hospital to learn much about the administration of anesthetics. I would not care to give chloroform and undertake the operation of extracting teeth. One can extract much better to have some one take the responsibility of administering the chloroform. Another thing is to go to the patient's house. I never allow the physician to give the anesthetic in my office. It is better in a great many ways to give it in the home of the patient. You avoid the odor of the chloroform and a great deal of inconvenience. Dr. Abbott's paper was a very good plea for the dentist to administer the anesthetic, but there is much to be gained by having a medical man do it, especially when he knows so much more about it. I wish to compliment Dr. Abbott on his paper.

Dr. Smith.—When we administer an anesthetic for the extraction of teeth, it changes a simple operation into a major one, and the ideal place for performing this is at the hospital, and the patient should be sent there and left there under the care of the staff, and after the operation should be allowed to remain there for some time. Whether a dentist should administer it, or call in an M.D., to assist him, must be decided by the dentist himself. If I thought I could do this well enough, I would do so, but I prefer not to. The one point I wish to advise everyone to pay strict attention to, is the examination of the mouth for foreign bodies. The following cases in my practice may illustrate: *Case 1.* — A patient was placed under an anesthetic (ether in this case). The doctor who administered examined his patient thoroughly, and I left the matter all in his hands, he knowing the whole history of the case. After the operation was over and the patient had somewhat recovered, she started to choke a little, and I put my finger in her mouth to remove some substance from the throat, and after examination discovered that there were two pins which had been there all the time. *Case 2.*— That same afternoon another patient came in, and I proceeded to make an examination of the mouth, and what did I remove again but two pins! I then turned around to my assistant and said, " Look here, for two pins I would close the office, for I am getting afraid."

DR. THORNTON.—I would like to make a few suggestions on Dr. Abbott's paper. He drew attention to the fact that the subject was not taught as it should be. We are ready to endorse his suggestion. With the introduction of the four year course are they going to arrange the curriculum so that the dentist will be qualified to administer chloroform or any other anesthetic? Dr. Price thought that the medical man should administer the chloroform. People have not heard of the dentist administering anesthetics so frequently as they have the physician. I would like to see the dentist administer the anesthetic so that the public would have confidence in him.

DR. BULMER.—I would like to congratulate the essayist on his paper and also to take exception to Dr. Smith's idea of sending my patient to the hospital. I think a great number of reasons can be given to show that this is not only undesirable but impracticable. I sometimes administer ether or chloroform myself. I took a course for that purpose under Dr. Thomas, of Philadelphia, and there are many things to be taken into consideration in their administration. On the one hand the dentist must have a good knowledge of the drugs used, and also their disuse, which latter often causes their administration to become dangerous. I think dentists should be able to administer their own anesthetics, and that the idea of calling in an M.D. every time we want an anesthetic administered is entirely out of line. I was called on some time ago to administer for a patient, and I dare say that if I had not been there the physician would have lost the patient, for he told me some time after that he did not know what he would have done if I had not been able to do this. If we hesitate to give our ability a chance to do its work we will become narrow-minded. No doubt there are students coming to our institutions who will be better qualified to take up this course than we have. Therefore I think dentists should lend their aid to furthering the course and eventually bettering our calling.

Dr. Hackett.—I agree with the essayist in regard to the enlarging of the curriculum so as to include anesthetics.. During my course we did not learn anything on the subject. I started to practise in a small town. I was the only dentist and there were three physicians. I noticed that when a physician was called in to administer chloroform he seemed too timid to administer it properly. I think it is one thing the dentist should be more proficient in.

Dr. Malden.—It is well known in the city that anyone about to undergo an operation is given a thorough course of preparation before the anesthetic is given. How many dentists do this with their patients?

Dr. Hamill.—I remember when administration used to be demonstrated at conventions if this kind. An incident of my early practice occurs to me now. I was called to the home of a man to extract a tooth for his wife. He told that a physician had tried to give her ether, but had failed; he then tried chloroform, but failed also. Then the man drove to the nearest town and got some whiskey and brought it home and gave enough of it to her to make her drunk. He wanted me to get out and I did it too. After that I made up my mind never to be caught that way again, and I have not. I then started to learn something about anesthetics, and fooled around here and there picking up anything I could. I used to go to a place where a doctor used to administer ether only, and see him do it. I often asked him why he did not use chloroform, and finally he told me that he "Didn't know a d—— thing about chloroform!" So I said to him, "Well, the sooner you learn something about chloroform the better, and then you will give up administering ether."

Dr. C. N. Abbott (closing).—What I maintain, gentlemen, about this matter is, that we should be taught at college to be competent in the use of the drugs, and if you feel that you are competent, you will give more general anesthetics than you otherwise would. Some person spoke of using brandy, saying it caused excitement when chloroform was used. Yes, it will in some cases, but oftener it will be found to lessen the period of excitement. Sometimes the excitement is the result of pushing your drug too rapidly. Do not push the anesthetic. If a patient is struggling, as you do not know what dose you are giving your patient, you should stop at once until quiet is restored. Now about the greater liability of teeth, roots, etc., falling into the larynx in the recumbent position. I must disagree most strongly with the gentleman who made that statement. In my experience with a patient in the recumbent position, you do not stand the chance of having this occur as in the upright position. When the head is slightly lower than the rest of the body it is almost impossible for this accident to occur. Another thing that has been touched on by some of the speakers. They say that they prefer to call in a physician. Now, gentlemen, that is but an acknowledgement of incompetency. Surely we should be capable of practising what is really our birthright. Anesthesia was given to the world by dentists, and if any man should be skilled in the administration of anesthetics we certainly should. There is to me, gentlemen, no doubt whatever as to whether a dentist should administer anesthetics himself. I say he certainly should, and we will have the respect for the profession much increased. I have had many members of physicians' families come to me on the advice of their fathers to have chloroform administered for extractions. Now I don't want to be at all misunderstood about having an assistant. It is absolutely essential to have one person perform the operation whilst another watches the action of the anesthetic. I would like to refer Dr. Wilkinson to Hare's latest work on therapeutics, in which he will find it stated emphatically that atropine is the best vasomotor stimulant we have, that it will positively raise blood pressure, and as death under chloroform is usually a vasomotor one, the advantage of atropine is manifest. Not only Hare, but Labordu, Shore, and many other authorities, hold the same opinion. Strychnine we know to be a most reliable cardiac stimulant. It can generally be depended upon to revive a flagging heart, and can be used up to one-third of a grain in emergencies. Dr. Wilkinson advocates the use of ether. Personally, I much prefer chloroform, as owing to the excessive secretion of mucus within the mouth it is oftentimes almost impossible to operate when ether has been used. In regard to choroform, when used with discretion and care in administration we have but little to fear. We must ever bear in mind that death under chloroform is invariably due to an overdose. I want to ask Dr. Wilkinson for one objection to the recumbent position. I have used it for several years and have found it most satisfactory. It is by all means the most convenient position, and I firmly believe the safest. What do you do when cardiac syncope is threatened? I think all will agree that it is wise to lower the head, and why? To favor the return of the blood to the brain. To avoid, as far as possible, stagnation of blood in the extremities and preserve a normal flow of blood in the vital centres of the brain, the recumbent position is indicated.

OCCLUSION.

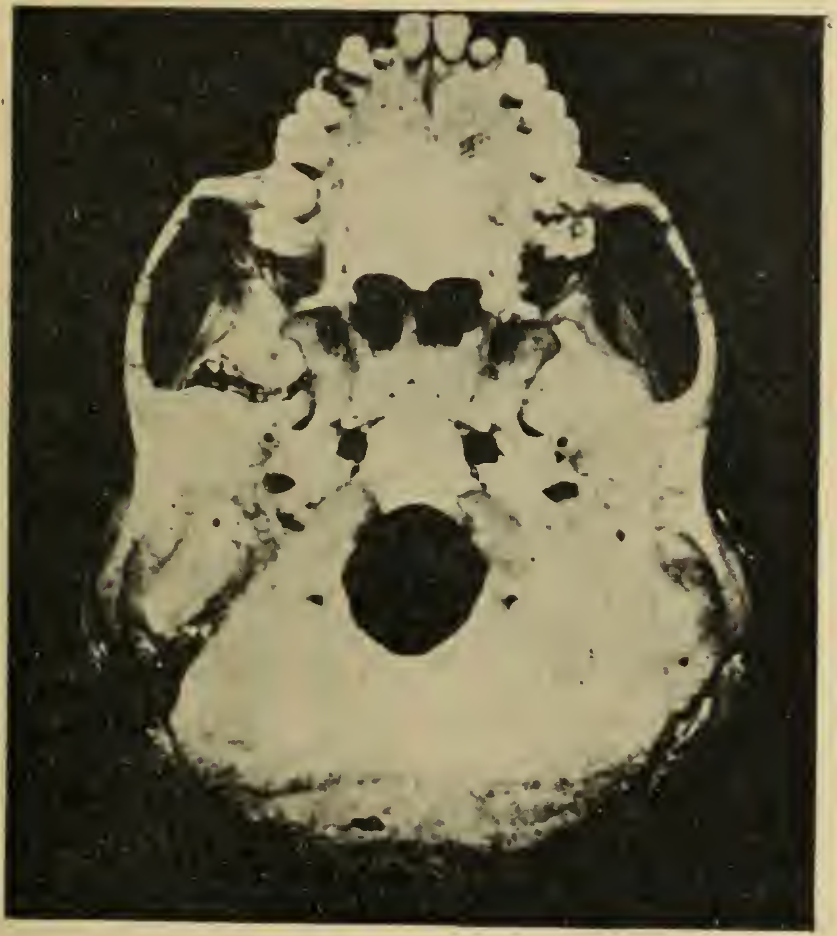
By G. Arthur Roberts.

Read before the Toronto Dental Society, March, 1904.

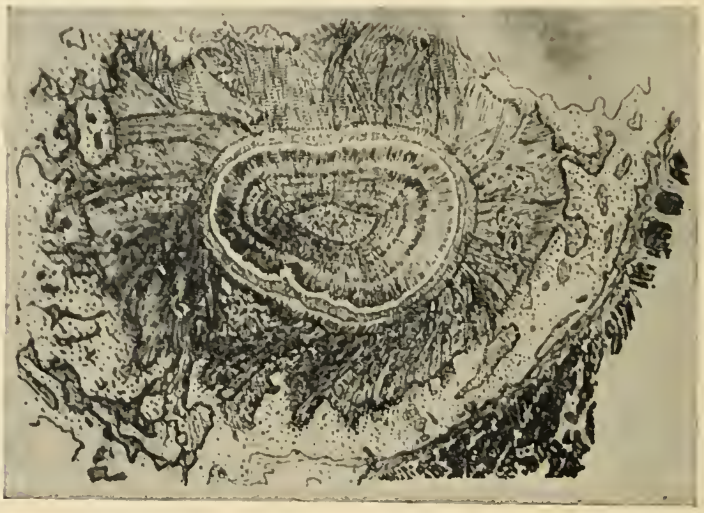
It is the purpose of the Society, I believe, to spend two or more meetings in considering the subject of orthodontia, and I am very glad that the committee in charge of the programme have set a paper on "Occlusion," for the first meeting.

When a patient presents with an irregular tooth and asks to have it straightened, it is to be feared that occlusion does not occupy much of the thought of most dentists when considering the treatment of the case. Such a course to my mind is as unwise as that of a dentist who treated the putrescent pulp of a lateral incisor which had a fistula discharging in the palate, by painting the labial surface of the alveolus over the root. It is beginning at the wrong end, treating the symptom for the cause. Occlusion should be uppermost in our minds, and also the underlying principle governing all operations in dentistry; pre-eminently is this so in that branch of our work which we call orthodontia. So I think in devoting the first evening of the series to the study of "Occlusion" the committee have been wise.

I said a moment ago that occlusion should be uppermost in our minds. Why should it not be, as the chief purpose of the dental mechanism is mastication? The teeth themselves demonstrate this with their various forms to serve different purposes, the cusps, the enamel ridges and tubercles, the roots, single where the strain is chiefly vertical, and double or triple where there is great lateral stress. One does not need to visit the architectural monuments of Europe to see wonders in construction, and in studying the human skull we cannot but be impressed with its beauty and strength. The arch is one of the most powerful structures for bearing weight or resisting strain, and how many arches we find in the skull which bear and resist the forces of occlusion. The orbital and nasal arches resisting vertical pres-



sure; those powerful flying buttresses, the zygoma and zygomatic arches bracing the maxillary bones on either side; the graceful curve of the alveolar process and the beautiful parabolic curve of the morsal surface of the teeth, rendered necessary by the nature of the temporo-maxillary articulation; the strong bands of bone on the bucco-and linguo-gingival borders of the alveolus, particularly in the molar region; the palatal process of the maxillary bones, the powerful ridges and peculiarly strong formation of the mandible—these all demonstrate clearly that the oral framework was meant to resist the great strain incident to occlusion, and was designed with this purpose in view. The muscles of the lips, jaws and tongue, it need hardly be said, were designed for the same purpose. But there is one membrane especially which perhaps many of us know little about, and yet which plays no mean part in occlusion and exercises great power and resistance in our efforts to correct malocclusion. I refer to the peridental membrane. The inelastic fibres of which it is composed are similar to those forming tendons and ligaments. Bones will very often break before the tendons will pull off from them, and the attachment of the peridental membrane is very much the same, the fibres entering into the substance of the bone on one side and into the very structure of the cementum on the other, frequently having their origin next to the dentine.



In childhood the membrane is quite thick, and comparatively large blood vessels situated midway between the alveolus and the cementum traverse it from apex to gingival margin. As age advances, the osteoblasts form new bone, and the cementoblasts new cementum, thus encroaching gradually upon the membrane. The blood vessels are then found next to the bone, and in fact many of them lie in grooves on its surface.

The arrangement of the fibres is of very practical interest to us. At the gingival portion of the root the fibres pursue an almost horizontal course from one tooth to another, and frequently this attachment of one tooth to another is found, more or less, up two-thirds of the root. At the gingival angles of the root the fibres are arranged in such a way as to prevent rotation; above this they have an upward inclination from the alveolus to the cementum, acting as suspensory ligaments. As we near the apex, they assume a position more and more at right angles to the surface of the root. When we know a little about this membrane and the arrangement of its fibres, we can readily understand why depression of a tooth in its socket is the most difficult operation in orthodontia; why rotation is so hard to accomplish, and why drawing a tooth downward is the least difficult. When I show slides illustrating what I have said I am sure that you will agree with me that the structure of the skull, the muscles and membranes are all intended primarily for the purpose of occlusion.

Nature intended that every tooth should occupy a certain position, but through unnatural living or other obscure causes it is very rarely that we find all teeth in normal occlusion. Several members of our profession have been looking for such a condition for twenty years, and have examined thousands of skulls on this continent, in Europe and in some of the Pacific Islands. They have found some that are very near to normal, but the ideal has yet to be discovered.

We cannot all have the same conception of an ideal set of teeth from an artist's standpoint, since our opinions as to shade and form vary with our individual tastes, but we should all have the same ideal in working to correct malocclusion. We should have the normal position of every incline of every tooth so well fixed in our minds that we can recognize the malposition of an incline surface without a moment's thought. Until we are able to do this our success in orthodontia is in reality liable to be failure.

The first permanent molar is the key to occlusion. It is the first tooth to erupt, and if from any cause does not occlude normally with its antagonist, other teeth and sometimes all the teeth of the arch will be forced into malocclusion. If at the age of seven or eight we find that the mesial incline of the mesiobuccal cusp of the upper first molar does not occlude with the distal incline of the mesio-buccal cusp of the lower first molar, then is the time to make the correction, when the bones are elastic, the tissues less resistant, and the malocclusion limited to one or two teeth. I doubt if there was ever a case of malocclusion limited to one tooth in a child over twelve, and very often a simple appliance worn for a short time as soon as the trouble starts will correct a condition that may take months or years if allowed to stand.

The lower teeth are the first to erupt, and over these the uppers are moulded. If the lower incisors are bunched at eruption, in ninety-nine cases out of a hundred we find the upper incisors over-lapping, protruding or retruding, and more or less twisted in trying to occlude normally against them. This, no doubt, is due to the muscular action of the lip. Another rule, as we might term it, is the tendency of the back teeth to press forward when the arch is not complete. If a lateral is in lingual occlusion, for instance, at first the space between cuspid and central is quite large, but in course of time this space will be more or less closed, by the moving forward of the teeth back of it, and drawing in of the arch by lip pressure. Again, as the permanent teeth erupt there is a marked movement forward and development of the process, the erupting tooth exercising a wedgelike action in driving the other teeth before it. If the teeth,

temporary and permanent, are not all present and in normal contact this movement does not take place, and we find the arch undeveloped, and the teeth irregularly placed.

Each and every tooth is just as essential to the dental arch as every stone in an archway is necessary to maintain its strength, utility and beauty. As each stone requires to be, and is cut intó a certain form, so each tooth is formed and contoured to occupy a certain position, and if any tooth occupies the position of another, the result is far from ideal in masticating mechanism, or in facial line. I have seen many models and examined many mouths from which the first molars had been extracted, and have yet to see a case where either the bite was not too close, the interproximate spaces uncomfortably abnormal, the lingual occlusion of the molars imperfect or the face too flat or fallen in between the nose and chin.

The object of the patient in seeking the services of the orthodontist is with rare exceptions to improve the personal appearance. This is a praiseworthy motive certainly, and one deserving of our very best efforts. In the majority of cases, if the patient is young, normal occlusion will produce the desired result, but photographs are desirable, and generally necessary to determine our treatment. For instance, if we find the upper arch protruding abnormally beyond the lower, and we do not consult the profile of the face, we may ruin the possible harmony of forehead, nose and chin by retraction of the protruding teeth when it is the lower arch that is at fault and requires to be brought forward.

But the point I wish to make, and to emphasize in this connection is that every tooth, or a substitute, must be present in both arches, and in normal occlusion, or we cannot obtain ideal facial lines. Of course, by ideal I do not mean necessarily a handsome or beautiful face, for we cannot make over a snub nose nor an idiot's forehead, but the lines between nose and chin will not harmonize with those of the forehead, nose and cheeks unless the teeth are all present and in normal occlusion. An eminent artist in the United States delivered a lecture on facial art recently, and he was given about twenty lantern slides made from photographs of faces taken before and after treatment by an orthodontist. He was asked to frankly criticize them, and in every case without exception where extraction had been resorted to he declared that harm had been done to the facial lines. He had never seen the photographs before, nor was he shown the models.

In closing, let me repeat, that we must know Nature's ideal perfectly, and must ever and always have it before us as the goal of all our efforts in orthodontia.

PORCELAIN INLAYS.

By Dr. Gordon McLean.

Read before Odontological Society.

The dental profession of to-day is reaping the fruits of the labors of a few persevering and skilful men who for some years have advocated that porcelain is the equal of gold as a filling material. The public are gradually developing a decided antipathy to the display of gold in anterior teeth; so much so that patients come requesting the removal of those fillings that are conspicuous, and the insertion of porcelain. Consequently a dentist not advancing with the times finds himself forced to refer these patients to other more progressive practitioners, or in some cases to depreciate the use and value of porcelain as a filling material.

Gold was formerly considered the most durable filling, but time has proved that porcelain in the hands of skilful operators is just as lasting, and, in many cases, even more permanent than its only opponent, gold. In mouths where no metal fillings give satisfaction, mouths where the forceps seem the only resource, porcelain jacket crowns and inlays have surprised even their most sanguine admirers in their efficiency. In aged, nervous, or invalid patients, one is permitted to perform artistic and permanent operations in porcelain without the nerve-racking procedure necessary in inserting gold fillings.

After good access has been secured the cavity is prepared in simple lines without antagonizing undercuts. If these should be formed in reaching sound dentine they are filled in with cement and the preparation proceeded with as if they had never existed. The enamel margins are finished sharp, and at right or slightly obtuse angles to the floor of the cavity by means of inlay burs, round burs, and corundum points. These latter are very satisfactory where the size of the cavity and means of access will admit of their use. Finally, Arkansas stones are used to give the sharp edges a fine polish.

A piece of matrix platinum somewhat larger than the cavity is now placed so as to extend equally beyond all margins except the cervical. Hold firmly with left hand, and secure imprint of cavity by means of the sharpened rubber tip of a lead pencil. Then by means of burnishers and spunk an accurate impression is secured, and then the platinum matrix gently teased out ready for the building in of the porcelain.

A combination of Close's body and Brewster's foundation, as suggested by Dr. Capon, of Philadelphia, seems to give a minimum degree of shrinkage. The former is ground somewhat finely for convenience in manipulation. In large contours Ash's mixing liquid used instead of water will allow you much more freedom in carving. The excess moisture can be easily removed by placing a small square of bibulous or good blotting paper on the surface of the body, while you draw the gnurled handle of an instrument over the pliers with which you are holding the matrix. When sufficient of the mixture has been added to allow for shrinkage, carving, and placing of enamel shades, it is now dried to a certain extent and shaped as desired, ready for the most important baking, the biscuit bake. If raised to too high a temperature here, the result is sure to be a disappointment, if not an entire failure. It should be withdrawn at the first sign of little particles commencing to glaze. Now replace it in the cavity for the second burnishing, to remedy any defects caused by shrinkage or imperfections in the first burnishing.

Accuracy in selection of the proper enamel shades can be acquired only by persistent personal experimentation. In anterior teeth when cavities involve sections of both labial and palatal enamel plates with intervening dentine, some allowance must be made for change in color caused by shadowing. To counteract this effect, enamel body considerably lighter in shade than that of the natural tooth should be used. The different colors should be applied in layers, using as little moisture as possible. The jarring down should be gentle so as not to destroy the gradual blending of shades. To remedy any defects caused by shrinkage in the final baking, a thin coating of Brewster's XX neutral enamel may be added. This will not change the tinting, and will give a good finish to the inlay.

Before removing the platinum try in to see if contour and occlusion is correct. Then strip the inlay; groove it parallel with its circumference with a diamond disc kept wet while cutting or etch with hydrofluoric acid.

The rubber dam is now placed on the tooth, and the cavity thoroughly dried and undercut. The proper shade of a good cement (Harvard quick-setting inlay cement preferred) is mixed to a thin creamy consistency, applied to the grooves in the inlay, and the surface of the cavity, and then the inlay inserted and held under pressure in its proper position by means of a wedge or tape till the elasticity of the cement is gone. Before removing the dam give the cavity margins a coating of paraffin or varnish—the former preferred.

The principal points in the operation are:

1. Proper access.
2. Sharp right-angle margins and correctly shaped cavity.
3. Accurate first burnishings.
4. Careful biscuit bake.
5. Thorough second burnishing.
6. Skilful shading of colors, not forgetting the effects of shadowing.
7. Cementation under pressure.

The porcelain inlay built, tinted, and inserted under the above conditions will place it far in advance of any method of tooth restoration in modern dentistry.

AN ACT TO AMEND "THE PRINCE EDWARD ISLAND DENTAL ACT."

Be it enacted by the Lieutenant-Governor and Legislative Assembly of the Province of Prince Edward Island as follows:

1. The seventh section of the said Act is hereby amended by inserting therein after the word "contained" in the sixth line thereof the following words "and with the by-laws, rules and regulations of the Society and of the Council respecting the qualifications to be required from practitioners of dentistry and dental surgery in the Province."

2. Sections 8, 9 and 10 of said Act are hereby repealed.

3. No person shall hereafter be entitled to have his name entered on the dental register (except students from this Province now prosecuting their professional studies in a dental college or institution such as is mentioned in sub-section *b* of this section who shall apply for registration within three months after the date of their graduation) unless he produces evidence satisfactory to the Council—

(*a*) That he has passed a preliminary or matriculation examination in the subjects specified in the by-laws of the Council and had his name entered in the dental students' register, also

(*b*) That he has after such examination and registration pursued his professional studies through a complete course through some Canadian dental college or university having a special dental department, or some such institution duly authorized by the laws of Great Britain or any of her dependencies, or from any dental college or university having a dental department in the United States of America recognized by the National Board of Dental Examiners of the United States, and has been graduated therefrom, also

(*c*) That he has satisfactorily passed an examination in the various branches of professional studies specified in the by-laws of the Council before professional examiners appointed by the Council, and upon passing the examination required and on payment of the fee for such examination, also the fee for registration, which fees shall be fixed by the by-laws of the Society, he shall be entitled to registration; provided that any person holding the degree of B.A. from any university recognized by the by-laws of the Society, or any person holding a teacher's license of the first-class in this Province, or anyone holding a second year certificate from Prince of Wales College shall not be required to pass the matriculation examination.

4. The Council shall cause to be kept by the registrar a book or register to be called the "Dental Students' Register," in which shall be entered the names of all who have passed the said matriculation examination, together with the date of registration and such other particulars with regard thereto as the Council may deem necessary or expedient. A fee of two dollars shall be paid for such registration and a certificate thereof.

5. When and so soon as it appears that there has been established in any of the other provinces of Canada an examining body similar to that constituted by this Act, or an institution duly recognized by the legislature of any of the other provinces as the sole examining body for the purpose of granting certificates of qualification and that the curriculum is at least equal to that approved of by the Council: the holder of a certificate of qualification to practise granted by the proper body in such other province, shall upon due proof be entitled to registration by the Council if the same privilege is accorded in such other province to practitioners registered in this province.

6. The majority present at the annual meetings or at any special meeting of the Society called for that purpose may make regulations and by-laws for the government of the Society.

7. The majority of the Council at any meeting of the Council may make by-laws, rules and regulations, and from time to time repeal, alter or amend the same respecting the following subjects: Rules of order; the number to constitute a

quorum of the Council; the duties of the officials of the Council; the holding of examinations under section 3 of this Act and the subjects of such examinations—the fee to be charged for such examination and for registration; the appointment of properly qualified persons to conduct the examinations; decide upon the times and places for holding such examinations and the remuneration, if any, to be paid such examiners; and generally respecting all other such matters as may be found necessary for carrying out the provisions of said "The Prince Edward Island Dental Act" and of this act. All the by-laws of the Council made under this section must be approved of by the Society at a general meeting before coming into force, and all official acts of the Council which concern the dental profession shall be subject to an inquiry by the Society, which may approve, amend, alter or reverse the same.

8. All by-laws of the Society and of the Council shall receive the approval of the Lieutenant-Governor-in-Council before the same shall have full force and effect.

9. In case any person registered under the provisions of said Act has never been a resident of this province, his name shall be expunged from the register, and it shall not be lawful for such person to practise dentistry or dental surgery in this island for hire, gain, or hope of reward until and unless he complies with and becomes registered under the provisions of this Act.

CARE OF THE TEETH.

By Dr. Gowan.

Read before the last meeting of the Women's Institute.

Decay of the teeth will not occur if they are kept entirely clean. Therefore, the first thing necessary in the care of teeth is cleanliness, next, the services of a competent dentist, then cleanliness always assisted by better knowledge. Eat food that requires vigorous chewing, and clean the spaces between the teeth with quill toothpick after every meal. Use tooth-brush and clean water at least once a day, or as often as you wash your face. Preferably the brush and water should be used after every meal.

Hold the brush lightly between thumb and tips of first and second fingers, to allow a rapid yet gentle action of the bristles upon all surfaces of the teeth and to prevent injury to the gums and delicate lining of the mouth. Learn so to use the brush that it will clean all the surfaces of all the teeth—upper and lower—

inner as well as outer sides, and the spaces between. Use a large bowl of water, or better, a stream as from a tap, holding your face close over it; keep the brush as wet as you can by frequent dipping, and allow the excess of water to run out of the mouth while brushing. Rinse with a glass of water to finish.

Except when prescribed by a dentist use no drugs, powders, dentifrices, or soaps, and avoid all nostrums sold for the teeth. They are mostly injurious. Water costs you nothing and is far better. However, if the teeth become discolored, the wet brush touched to dry powdered pumice stone will take up enough to perfectly polish the surfaces of the teeth when properly applied.

Frequently examine your teeth in a small looking-glass. Get acquainted with them. And once a year, if you are under thirty, have them examined by a dentist. Children's teeth should be examined oftener.

At the age of three years a child has twenty temporary teeth. About the sixth year permanent teeth begin to appear. The first permanent grinders appear behind the temporary ones several years before the latter are lost. This occurs generally between the age of six and seven, and from this time until the age of twelve the child will have twenty-four teeth. During this period the mouth undergoes the greatest changes, and should be frequently examined. Parents often do not know that a child has permanent grinders at this time, and so neglect to have them attended to until toothache begins. In this case serious trouble and loss of the teeth may follow.

If when they begin to decay the teeth are repaired by filling, the pain, time and expense of the operation will be much less than if delayed until the cavities are large, and, besides, the child will generally submit to it willingly, whereas if delayed until disease and pain compel the extraction of a tooth, the child will forever afterwards dread dental operations. And this may defeat further attempts to save his decaying teeth.

Allow no one but a qualified dentist to extract or otherwise meddle with the teeth of a child, for no one else is competent to judge what ought to be done. Far-reaching injury may result from the ill-advised extraction of a child's tooth; so what nature, the child, or yourself cannot do, refer to the man whose special knowledge enables him to see and to do what is best, and to instruct the child in how to clean and examine his own teeth as well.

For lack of acquaintance with their teeth young people often suffer decay to proceed unnoticed until pain warns them that something is wrong. The use of toothpick and glass might in most cases enable them to find cavities before decay has gone so deep as to cause toothache. But if toothache has begun, proper treatment and filling will be the remedy. More time and work will be required, however, for which a larger fee must be paid.

When a cavity is found or suspected, have it attended to without delay. The damage should be repaired, decay stopped, and so far as possible prevented from beginning again by filling.

When properly done, filling is a success in preventing decay, suffering and loss. On the other hand, such work badly done for lack of knowledge, skill, or honesty, is worse than useless, for it destroys people's confidence in filling operations, and leads to loss of teeth in whole families. The quality and value of a dental operation depend on the knowledge, skill and honesty of the man who performs it.

By all means preserve the natural teeth. They are essential to health, beauty, convenience, and the voice. If this advice is too late for you, see that your children have the benefit of it, and, for them, never contemplate artificial teeth. Old people, whose teeth are already gone, have no other remedy. For them great skill must be used to make artificial teeth satisfactory, and even then they are almost as far short of perfection as are glass eyes and wooden legs.

In this kind of professional service there may be vast difference between the work of one man and another, so do not think that you can buy a set of teeth as you do a set of dishes, not caring who makes them. You will be the sufferer if you try it. Always keep artificial teeth clean. Use brush and water on them every day and do not wear them at night. Your mouth needs to be rid of the plate at night as your feet need to be rid of rubber shoes.

In consulting a dentist, remember always that his judgment and advice is what you need most. Do not dictate. For you are no better prepared to dictate to a dentist than you are to a lawyer or a physician. If you have no confidence in his knowledge of dentistry, go to someone else.

If practising properly he has no goods to sell, no "prices" to quote, and nothing to advertise. His business is to render professional service by means of special knowledge and skill for his patient's welfare. For this he collects a fee proportionate to the importance of the service rendered. He instructs his patients so far as possible in means to prevent suffering and loss, and takes a charitable view of human weaknesses and a sympathetic interest in relieving pain.

The teeth are the most prominent feature of the human face. No other feature—not even the tongue—tells so long a story in so short a time. This story gives wonderfully pointed information as to the education, intelligence, cleanliness, good sense, taste, style, social position, and general character of the person whose teeth you see. And you need not be a dentist to read it.

CARE OF THE TEETH.

By Dr. D. V. Beacock.

Read at the recent meeting of the Brockville Teachers' Institute.

Nature has laid out her art in beautifying the face; she has touched it with vermilion, planted in it a double row of ivory, made it the seat of smiles and blushes, lightened it up and enlivened it with the brightness of the eyes, hung it on each side with curious organs of sense, given it airs and graces that cannot be described, and lastly, surrounded it with such a flowing shade of hair as sets all its beauties in the most agreeable light.

Dentistry, from the Latin word *dens* or *dentis,* meaning tooth, has had a longer period of infancy probably than any other profession, dating as it does from the earliest history of man. Commencing its strife for eminence contemporaneously with the science of medicine, it has been compelled for centuries to remain almost unnoticed. It has often been a great wonder to me that people still remain so ignorant of anything pertaining to their dental anatomy, while numerous subjects of far less importance than the human teeth have been again and again treated of in books and periodicals. The public have been instructed how to take care of their flowers, trees, bees, birds, cattle; their hair, eyes and complexion, and volume after volume of domestic medicine has been published. In short, nearly every subject; but who, I ask, ever saw or read a work published for general reading and instruction on dentistry? Now, under these circumstances I have been considerably puzzled how to commence and condense the greatest amount of useful matter in the smallest possible compass. If I should attempt to describe the anatomy of the teeth and surrounding parts—bones, muscles, tissues, veins, nerves, arteries, glands, etc.—it would take up a much greater time than anyone is aware of and would fill a good-sized volume.

In tracing dentistry back to its beginnings, one naturally turns to the Old Testament. We find that the teeth were then appreciated on account of their services as well as adornment, even then more than now. The Mosaic law says: "If a man smites out his manservant's tooth, he shall let him go free for his tooth's sake. Again, Jeremiah says, "Every man that eateth the sour grape his teeth shall be set on edge." We also read "an eye for an eye, a tooth for a tooth," etc.

Leaving Biblical history, we come to profane history. Herodotus tells us that the Egyptians made treatment of the teeth a separate branch of medical practice. And Belzoni informs us that artificial teeth of ivory and wood were found in tombs.

Gold fillings have been found in mummies. Ovid and other ancient poets allude to artificial teeth. I myself have seen artificial teeth that were taken from the tombs in Etruria. They are fastened in with gold wire. These must have been in use many centuries before Christ. It is said that the two Roman imperators, Anthony and Caesar, were both equipped with false teeth. Geo. Washington also wore a set made out of one solid piece of ivory. I had them in my hands.

An individual in Scotland accompanied the British Army in the Peninsular War against Napoleon for the purpose of procuring teeth from the mouths of soldiers who fell in battle. He supplied himself in this way with many thousands, and afterwards obtained a large amount of money by selling them to dental doctors. The fact, however, came to the public knowledge, and his house in Edinburgh was destroyed by an infuriated mob, while he himself had to flee to save his life.

Both medicine and dentistry had very crude beginnings. Here is a type of their wonderful knowledge and cures. Dr. Toope, of Oxford, as late as 1685, dug up several bushels of human bones and writes Sir R. Colt Hoare that from them he made a noble medicine. Wine in which the bones of a saint had been dipped cured lunacy, the touch of a hangman's rope cured sprains, and the breath of a donkey cured toothache. And yet we in this so-called enlightened age, right here in the town of Brockville, have not much to boast of over our credulous ancestors. How few of us ever think that we are under the thrall of the silliest kinds of silly superstition in many things! How many persons carry chestnuts in their pockets to prevent rheumatism? Others believe in charms to cure toothache; others wear liverpads for the liver. And thousands who after years of violation of the laws of health fully expect to be restored by purchasing over the drug-store counter, for fifty cents or a dollar, some poisonous compound that they know nothing at all about, and pouring it into their stomachs that they know far less about. Such is faith in patent medicines, when blind credulity is wedded to ignorance. After nearly forty years of continual practice in dentistry, one of the most difficult trials I have had to contend with was to convince parents that children don't get all their teeth twice, and I question if there are a dozen families in Brockville after all these years believe me when I tell them this. And what is the result? Why, thousands of children's teeth are allowed to go to absolute ruin, and their physical health totally destroyed in time, through this dense ignorance of dental anatomy. One thing is certain, that the schools of Brockville will be taking a step in advance when the teachers begin to take an interest in the care of children's teeth. Because whatever is instilled into the young mind generally remains through life. The brain is an organic register of every impression.

I predict the time is not far distant when school teachers will be required to hold a health certificate as well as a teacher's certificate. Why should they not have some knowledge of the laws of digestion, respiration, secretion, excretion, reproduction, nervous and muscular action, etc., as well as some knowledge of physiological processes, such as being able to trace the food from its entrance into the mouth and its transmutation into blood, with the different metabolic changes connected therewith until it becomes differentiated into the bodily organs. And I note that the Board of Education in Philadelphia voted to give consideration to the request of the National Dental Association asking the co-operation of the board for arranging for short talks to teachers, parents and pupils on the preservation and care of the teeth.

Parents owe their children a good set of teeth, and they have no moral right to turn their innocent and helpless children out into the world crippled for life, as all children who have bad teeth are. Providence never placed thirty-two beautiful teeth in a human being's mouth to become a prey of the all-devouring forceps of the ignorant dentist who takes delight in boasting how many he has extracted, and the number of rubber sets he has made in a week.

Another reason why physiologic knowledge should be taught in schools. Why is it that so many patients marvel at the peculiar dispensations of Providence, which removes their children by bronchitis, gastric fever, typhoid and scarlet fever? And why, I ask, is quackery rampant over the land with all its poisonous pills and nauseous drugs? A proper education should enable any person to escape most of these evils. We should ever remember that ignorance is always visited just as sharply as wilful disobedience; incapacity meets with the same punishment as crime. Nature leaves everyone to find out why his ears are cuffed.

Dr. White, of Philadelphia, in *Dental Cosmos,* January, 1887, writes: " It will not be denied, I think, by any observing practitioner whose observation embraces representatives of three or four generations that from the great-grandparents to their children's children there is a general continuous deterioration in the quality of the dental outfit through the successive generations. All the facts of professional experience which have been gathered, all improved modes of practice which the best heads and hearts have thus developed, have not sufficed to stem the tide which seems destined to render the human race edentulous, that is, toothless."

You will now naturally ask why our rising generation suffer so much from tooth decay?

There are many causes. First, mothers are more emotional in civilized than in savage life, and the so-called higher education seems to increase this emotionality and excitability. The transmission of these is an increasing evil. Inheriting nervousness, the child is born into a hot-bed of emotion and its education is highly emotional; society then excites and social pleasures exhaust the young girl, till the modern woman becomes the bundle of nerves that she is, and often totally unfit to become the mother of children in turn, and which are usually born with large brains and small, weak bodies, and scarcely any digestion at all. This emotional life into which such children are ushered is a thousand times worse than the most intense intellectual strain which can be put upon the child. And this, under the highly injurious competitive and ambitious system in common vogue in our Public Schools is bad enough. No doubt you as teachers are well aware that there is a law of human force called the law of compensation, which proclaims that for every atom used in one direction there is an equivalent atom wanting in some other direction. And thus it is that the brain is supplied in part at the expense of the rest of the body. This hyper-nutrition of the brain means deficient nutrition of the body of the child, which in turn means deficient formation of the teeth. Cause and effect were never more closely related and the relation more demonstrable. And the worst of it is there are no proper compensations. On the contrary, a condition of pater-natural emotional preponderance is established as an inveterate habit of life; hence the great number of nervous individuals. No wonder our asylums and hospitals are filled to overflowing with broken-down humanity.

Malnutrition, that is, want of or lack of nourishment. When the teeth germs are forming, if the blood is poor and waste-laden, or filled with poisons during the formative period, they must, of course, be deficient. A tooth is composed of cells the same as any other organ of the body. If these are supplied or fed with impure nutriment then the whole structure will show evident signs of weakness, just as any building will when soft bricks or other poor material is used. If the blood and nutritive pabulum with which the teeth are fed is healthy, the teeth will be perfect, if not, there will be deficient spots in them. Pits and furrows upon the teeth always indicate arrest of development due to malnutrition, either in utero or after birth, while the teeth are forming. Any illness in infancy or childhood, especially of an eruptive or inflammatory character, impairs the health and vitality of the teeth. The fever ensuing from vaccination has the same influence. Any expert dentist can, by examining the mouth, tell with great accuracy the period of these illnesses.

All teeth ossify, or rather calcify, from centres like other bones, and often sickness or even medicines will so deteriorate and lower the nutritive quality of the blood supply, so that these centres never coalesce; then there is a weak spot in the crown or enamel of that tooth. Sometimes these sick spells show themselves unmistakably on the cutting edges or crowns of teeth by being almost devoid of enamel protection, and so sensitive that they are painful to the touch of food contact.

Pills, powders, tablets, soothing syrups and medicines of every description, no matter by what name they go, whether medicine, mystery or moonshine, injure children's teeth; in fact, any drug that lowers the vitality or causes intestinal disturbances, or in any other way interferes with the blood current, either in vitiating it or retarding or quickening the circulation, or even preventing the excretory organs from eliminating the waste products, must of necessity produce faulty metabolism, or malnutrition, by carrying diseased pabulum to the delicate tooth germs that are only in a formative and delicate condition in children.

Then, again, we are told that microbes cause teeth to decay. I have little or no faith in that theory. Microbes do not cause disease; they are the result of disease. The condition must first exist before the much maligned microbe can get in his work, for a certain degree of morbidity in the soil is absolutely necessary before any microbe can do harm. Seeing that it is only in morbid soil that the microbe becomes morbific, it naturally follows that you must be ill before the microbe can make you ill. A microbe in a healthy body would stand about as good a chance of doing harm as a mouse in a closed room with half a dozen cats. But microbes have become a fad, and no amount of reason or demonstration can overthrow established opinions. Let me here say that if you have a clean, healthy tooth no microbe can hurt it; but once let the mouth become diseased from any cause, then the micrococcus or some other -cus, will soon be on hand to break down the lime salts of the teeth and help clean them up and out. And here let me give a word of warning. Prof. Jacoby says: " It may be quite possible that we can learn how to poison and exterminate these so-called germs, but that in so doing we may kill the patient, and in fact this sort of bad practice has been often observed with fatal results. When we go into battle and fail to distinguish friends from foes, we are tremendously handicapped, and if we make an analagous blunder in our diagnosis and treatment our patients are very likely to die cured.

Teeth are liable to many diseases. Even medicines, either in contact or through the circulation, may cause decay.

Likewise teeth are the cause of many diseases. Chorea, or St. Vitus' dance, deafness, insanity, facial neuralgia, tic douloureux, epilepsy, catalepsy, blindness, lockjaw, convulsions—have all been caused by diseased teeth.

Anyone who has occupied himself with the subject knows that loss of appetite, nausea and general ill-health are often brought about by improper attention to the mouth, causing a chronic state of putrefaction, the products being absorbed by the mucous membrane, with serious results to the general health, and these patients finally restored to good health by simply putting the teeth in normal condition.

A mouthful of decaying and rotten teeth, their roots filled with pus, becomes a real charnel house, poisoning the very food we eat, the air we breathe, together with the secretions that mix with our food, thus carrying disease, destruction and death to every part of the living organism, even to paralyzing the brain. When it complicates heart disease, death is very liable to occur during an attack of neuralgia. Thus we see how important it is to keep our masticating apparatus in health, as diseased teeth are a predisposing cause of neuralgia.

The enormous amount of sickness and ill-health caused by decay and loss of teeth cannot easily be estimated. People frequently suffer from dyspepsia, neuralgia and many other nervous affections, diseases of the eye, ears and throat, caused either directly or indirectly by the diseased condition of the teeth and mouth, and frequently spend large sums of money to cure the trouble that a little care and small expense would have prevented, and any skilful dentist could readily cure.

The manifestations of reflex excitability or neurosis are numerous and varied. For instance, the pain in a certain tooth may not indicate that the tooth is the seat of the trouble. It may be in other teeth or tissues either near or remote. These dental disorders may and often do induce pathological conditions in other parts of the body or in the nervous structures themselves without the existence of any subjective intimations of pain in the teeth on the part of the patient. In other words, we may have toothache in the brain, the ear, the stomach, the liver, or hipjoint, or we may have gastralgia, headache or dyspepsia in the teeth.

Strange as it may appear, all our sensations, without exception, originate in the brain, yet we always localize them somewhere else and never in the brain. For instance, if I burn my foot, or prick my finger, hurt my shoulder, or smell a pleasant perfume, touch the nerve of my tooth, I instinctively place all these sensations in my foot, finger, shoulder, tooth, etc.

The mouth is the portal or entrance to the system, and through it must pass all that sustains life in the form of nourishment. If the portal is broken down or decayed we shall find the building in like condition. So it is with the teeth and mouth as compared with the body. The condition of the mouth exerts a much greater influence over our general health than either patients or physicians are willing to admit. One only has to reflect for a moment, that the mouth may at any time become the focus of infection in many ways, and thus lay the foundation for some of the most dangerous diseases. It is often very difficult to comprehend the reflex nervous phenomena in connection with teeth and other organs. Then, again, if our food is not thoroughly masticated, insalivated, etc., an extra amount of work falls upon the stomach, and it is called upon to do vicarious duty; then the liver is compelled to do extra work; these overworked organs then throw extra work on the kidneys, lungs and other emunctories and eliminating and excretory organs. Finally, when all these overworked organs have been doing vicarious duty for each other, there is a collapse, the waste laden blood is carried to each and every organ and tissue in the body, even to the brain. No wonder there result low spirits, a form of insanity that is often termed melancholia—all caused by faulty metabolism; in other words, malnutrition. Now, I would ask, where did these troubles first originate? Rarely do we see them where there is a sound set of teeth and good digestion.

Rapid decay of the teeth indicates neurasthenic, degenerate, autotoxic and toxic conditions. Disorders of the teeth and gums cause pathogenic disturbances which may and often do produce diphtheria, tuberculosis, and other mouth and throat lesions. Pus taken into the stomach and intestines causes indigestion in both, and if inflammation of the intestinal tract be present, this pus may infect these parts.

The teeth cannot be isolated or divorced from the rest of the body. The same blood that circulates in the teeth circulates in and through the heart, liver, kidneys and extremities. Hence, with such a broad blood supply and nervous connection, with such great possibilities for irritation and remote nervous manifestations the dentist should have a general knowledge of the whole body, and make a study of it in its completeness before he can expect to render suitable treatment, whether preventitive, palliative or curative. We must never forget that the principles of disease are the same whether they occur in the deep-seated internal organs, the extremities or the teeth. The dental organs are so far-reaching in their influence through their intimate and extensive nervous connection through the fifth nerve, and thus with the eye, ear and throat.

Advice to Parents and Teachers.

Children should be taught to clean their teeth twice a day, morning and evening, brushing them up and down more than crosswise.

They should be taken to a dentist to have their teeth examined three or four times a year.

Never allow a tooth to ache before seeing a dentist; it may be too late.

Never under any condition have abscessed teeth lanced on the outside. It always causes disfiguration.

Never wait for the swelling to go down in abscessed teeth before advising extraction. Very serious results often follow such delay, frequently death.

Wisdom teeth should not be extracted if possible to save them. Lower wisdom teeth often prove fatal, when abscessed, owing to swelling and pus forming in the throat, causing strangulation.

Parents should instil into the minds of their children that the dentist is their friend instead of being taught to believe that he will punish them.

Now, what has dentistry done for the world? Lecky, the great historian, says the discovery of anesthesia has done more for the happiness of mankind than all the moral philosophers put together. And let me here inform you that it was a dentist, Dr. Horace Wells, of Hartford, who, in 1844, gave this great boon to the world.

Previous to this discovery all operations, surgical and dental, were performed without the aid of anesthetics. Surgeons went on cutting and carving, and the liveliest imagination utterly fails to picture the sufferings and maddening yells of the poor helpless and despairing victims. Now all is changed. " The fierce extremity of suffering has been steeped in the waters of forgetfulness, and in the deepest furrow in the knotted brow of agony has been smoothed for ever."

" Dentistry," says Dr. Oliver Wendell Holmes, of Boston, " has established and prolonged the reign of beauty; it has added to the charms of social intercourse, lent perfection to the accents of eloquence; it has taken from old age its most unwelcome feature, and lengthened enjoyable human life far beyond the limit of the years when the toothless and purblind patriarch might well exclaim, ' I have no pleasure in them.' "

Clinics at the Ontario Dental Society.

REPORT OF THE SUPERVISOR OF CLINICS.

By W. G. L. Spaulding,
Supervisor of Clinics.

I wish to thank the district representatives for their cooperation, and the clinicians for their share in making a satisfactory and interesting clinic.

This year a departure was made by having the clinics presented on the first day of the convention, and a place on the programme following for discussion of them. Owing to lack of time this could not be fully carried out, but the advantage of the plan seemed to be assured by the interest shown.

Porcelain work received a share of attention, and both the high-fusing and the low-fusing methods were fairly demonstrated.

A bacteriological demonstration, testing the condition of hypodermic syringe-barrels and points was a feature overlooked by many, and of which a description follows.

Clinics not reported in these pages are omitted because no written description of them was submitted.

THE USE OF VULCANIZABLE GUTTA-PERCHA IN REPAIRING DENTURES.

By Dr. W. A. Brownlee.

I prefer vulcanizable gutta-percha to rubber for positions difficult of access in repairing, because of its plastic properties. It works under the warm spatula very much like wax, while the rubber is unyielding and elastic, and will not stay where you put it.

My first step in repairing a denture is to assemble the parts and retain them in position with wax; oil the plate slightly and make a model upon it. When the plaster is set, remove the model and prepare the parts as you would where rubber is altogether used. Now restore that part with gutta-percha, which cannot be reached to pack after flasking. Gutta-percha is especially suitable for dentures where gum sections are used, and in which we frequently find cracks running diagonally upward behind a section. In such cases cut away the edges of the break with a round bur, roughen the surfaces and fill completely with the gutta-percha. In the use of this material, I prefer to bevel the margins and roughen them. The adhesion is then perfect.

The gutta-percha may be veneered with pink rubber if desirable. Always pack the accessible parts, where pressure is possible, with rubber, as it is stronger than gutta-percha when vulcanized. When both are used in the same case the point of union is not noticeable.

A single tooth may be replaced in a denture by simply cutting away the part as in an ordinary repair; roughen the surface and fill the space with vulcanizable gutta-percha. Warm the tooth and press it into position, and trim away the surplus gutta-percha with a warm spatula. This may be buried in the flask without separation and vulcanized forty minutes at 320°, and constitutes a handy way of quick repair.

Selections

THE ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

By J. B. Willmott, M.D.S., D.D.S., Dean, Toronto.

The development of the Royal College of Dental Surgeons of Ontario as one of the educational institutions of the province is so closely associated with the growth and development of the dental profession as not to be separable from it. Previous to the year 1867, dentistry in Ontario had no organization and no standard of qualification. Men entered on practice, such as it was, after a private pupilage of from three to twelve months. many of these were men of fair general education and of studious habits. In time they acquired a good measure of scientific knowledge, and a high degree of manipulative skill. The older practitioners recognized the importance of organization and co-operation in raising the standard of their calling. Early in 1867. the Dental Association of Ontario was organized, mainly through the efforts of B. W. Day, M.D., of Kingston. The first regular meeting was held in Cobourg, in July, 1867, when the preliminary steps were taken to secure an Act incorporating the profession. At the second meeting of the Association, held in Toronto, in January, 1868, fully ninety per cent. of the practising dentists were present. The first Legislature of the Province was then holding its first session. The Association prepared and had presented to the legislature by the late Dr. Boulter, one of the members for Hastings, a petition asking for the passing of an Act regulating the practice of dentistry in Ontario. The "Act respecting Dentistry," which was introduced and piloted through the House by Dr. Boulter, received the assent of the Lieutenant-Governor on March 4th, 1868.

This Act incorporated the dentists of Ontario under the corporate title of the "Royal College of Dental Surgeons of Ontario," and placed the control of the college in the hands of a board of directors elected by the members of the college, the term of office being two years. An important part of the duty of the board was to see that entrants into the profession were properly qualified, and incidentally, if necessary, to provide educational facilities for their professional training. At this date (1868), there were already in the United States ten colleges which had been established for the purpose of giving systematic instruction in dentistry. During the summer of 1869, arrangements were completed for opening a teaching department in Toronto. The medical subjects of the curriculum were to be taken at the Medical College of Victoria University. The course was announced to commence on October 1st, 1869. Rooms were secured and fitted with needed appliances for teaching dentistry, both didactically and practically. The experience of one term, however, proved conclusively that the undertaking was premature, and it was abandoned at considerable financial loss.

In 1875 another attempt was made to furnish the needed instruction, but on a much less pretentious scale. At the request of the board, Dr. J. B. Willmott and Dr. Luke Teskey undertook to establish the "School of Dentistry" of the Royal College of Dental Surgeons, under the direction and supervision of the directors, and with a small definite financial assistance from them, the Faculty taking the lecture fees and assuming the entire financial responsibility. The first class, numbering 11, began work on November 2nd, 1875. This arrangement continued until the close of the session of 1892-3. The attendance at the school having reached 90, the time was opportune for placing it upon a more permanent footing, and in closer relation to the profession.

By a by-law of the directors it was made an integral part of the Royal College of Dental Surgeons, the directors assuming full control, receiving all fees, making all disbursements, formulating the curriculum, as well as appointing all professors and teachers, and paying them fixed salaries.

From year to year the number of students has increased. For session of 1903-4 the number in attendance was 190; and of these, 54 graduated at the College Commencement, April 29th, 1904. The staff consists of 11 professors, 1 lecturer, 3 instructors, 8 demonstrators, 6 assistant demonstrators, 2 clerks, and a librarian. A janitor and his assistant complete the personnel. Up to and including the session of 1903-4, 871 students have complied with the requirements prescribed by the curriculum, and have received from the Royal College of Dental Surgeons of Ontario the diploma of L.D.S., which carries the legal right to practise dentistry in Ontario.

The premises first occupied were two rooms rented in a business block. This accommodation was increased from time to time, as it became necessary, by renting more commodious premises. In 1895 it became apparent that. to secure adequate facilities for the school, it would be necessary to erect buildings specially designed for college purposes.

The building now occupied by the school, on College Street, was designed by Mr. D. B. Dick. It was begun in 1895, and, when completed, was formally opened by Lieutenant-Governor Kirkpatrick, October 1st, 1896. This building was enlarged, for the first time, in 1898. But it was soon outgrown again, and a second large addition was erected in 1902.

The building has a frontage on College Street of 92 feet, a depth of 106 feet, and a height of four stories, giving ample accommodation for 300 students. It contains two lecture-rooms, chemical and metallurgical laboratories, a laboratory for histology, bacteriology and pathology, separate dental laboratories for the students of each year, a museum, a library, a reading-room, a ladies' sitting-room, clerks' rooms, a cloak-room, a board-room, a professors' room, a clinic-room, an extracting-room, a reception-room for patients, and a large operating-room or dispensary, extending the entire length of the building, and furnished with 50 operating-chairs and accessories. The dispensary is visited annually by over 1,400 of the poorer classes of citizens, for whom all the ordinary operations of dentistry are performed by the senior students, under the direction of a corps of demonstrators. The entire property, including furniture and equipment, has cost a little over $80,000. It belongs to the dentists of Ontario, and has been provided entirely by the surplus fees from the school, without any public or other outside aid. The present net indebtedness is about $4,000.

From a very modest commencement, the curriculum has been widened and extended, until it now includes among its requirements the Junior Matriculation of the Education Department, or a fair equivalent, as the standard for entrance; a continuous pupilage of three years and a half, under indentures; and, during that period, attendance on four courses of instruction of seven months each. The courses of study embrace: Physics, chemistry, theoretical and practical; anatomy, descriptive and practical; physiology; histology; bacteriology; pathology, general and special; materia medica and therapeutics, general and special; principles of medicine and surgery; comparative dental anatomy; all the branches of operative and prosthetic dentistry; dental history and ethics; jurisprudence.

As the Act of Incorporation gave the college no authority to grant academic degrees, it was thought desirable to secure affiliation with one of the universities, for the purpose of securing a curriculum in dentistry leading up to the degree of "Doctor of Dental Surgery," the degree conferred by the American universities having dental faculties or departments. In 1873, after conference with several members of the Senate, a formal application was made for affiliation with the University of Toronto. Apparently the time was unpropitious; the application was neither refused nor granted. During the next three or four years, formal or informal application was made to each of the other universities in Ontario; but in each case with unsatisfactory results.

In the meantime the School of Dentistry had been organized and was developing respectable proportions, having reached in 1887-8 an attendance of 42. Early in 1888, in pursuance of the policy of Sir Wm. Mulock, then Vice-Chancellor of the University of Toronto, who desired to widen the scope and influence of the University by the affiliation of enterprising and progressive professional schools and colleges, it was intimated to the directors of the College that if an application were made to the University for affiliation, it would receive very careful consideration. Acting upon this intimation, on the 15th of March, 1888, formal application was made, and supported by such precedents, British and American, as were available. This application was favorably received by the Senate, and on May 25th, 1888, a statute was passed affiliating the Royal College of Dental Surgeons of Ontario with the University of Toronto. A curriculum in dentistry, leading up to the degree of "Doctor of Dental Surgery," was formulated in time for the session of 1888-9, and the first class, numbering 25, graduated at a special convocation held on April 22nd, 1889. Since that date classes have graduated each year; and the total now on the roll of the University (including the class of 1904), is 641. The University accepts the intermediate examination of the College, but conducts its own final examination. The curricula of the University and the College have been harmonized; so that, commencing with 1894, the final examinations of the University Department of Dentistry, and of the Royal College of Dental Surgeons, have been conducted by a board of examiners, appointed jointly by the University and the College, and under the joint supervision of both bodies, and consequently only one examination is now written for the University degree of D.D.S. and the College certificate of L.D.S., the latter being the legal qualification for the practice of dentistry in the Province of Ontario.

Commencing with that of 1900, the special convocation of the University for conferring degrees in dentistry has been held jointly with the commencement of the Royal College of Dental Surgeons, which lends added interest to both functions.—*University Monthly.*

Proceedings of Dental Societies

BANQUET TO DR. MILLS AND DR. DOYLE, OF BRANTFORD.

The banquet tendered to Drs. Mills and Doyle a few weeks ago was very successful. These two dentists, who are leaving Brantford shortly—Dr. Mills, to go to Toronto, to take over the superintendency of the Davis Dental Manufacturing Company, and Dr. Doyle, to go out west—have been very popular. Friends were present at the banquet from Galt, Toronto, and other outside places, as well as nearly all the members of the local Dental Society.

It was held at the Belmont Hotel, beginning at 9.30. Covers had been laid for thirty, and about that number sat down. Among those present were: Dr. Watson (chairman), and Drs. Mills, Doyle, Brethour, Babcock, Hart, Ballachey, Popplewell, Norris, Cuthbert, Britton; Moyer, of Galt; Trotter, of Toronto; Will Windyer, McKenna, and Webb, of Toronto; Corrigan, McGuire of Waterford. The others present were: Mr. E. Sweet, W. G. Raymond and F. D. Reville.

After Dr. Hart sang "The Maple Leaf Forever," an address was read to Drs. Mills and Doyle, by Dr. Popplewell, which expressed the great loss the departure of Drs. Mills and Doyle would be to the Brant County Dental Society, also to the churches and sports they had been identified with for years. Dr. Mills gives up practice to accept the superintendency of the new Davis Dental Manufacturing Company, a position his inventive and mechanical skill eminently fit him for, while Dr. Doyle intends to swell the numbers in the great North-West.

FOURTH INTERNATIONAL DENTAL CONGRESS, ST. LOUIS, AUGUST 29 TO SEPTEMBER 3, 1904.

We, the Committee on Local Information, submit the following facts, important for the success of the Fourth International Dental Congress:

Every member of the profession who has at heart the welfare of dentistry should give it support, financially and by action.

We, as American members of the dental profession, would well keep in mind that the Congress will be held in our great country, and pride should prompt us to action to make the meeting one of great magnitude, and far excelling its predecessors.

Let every dentist take hold with a will and push it to a successful issue.

This Congress should be of great interest to all of the profession. There is planned a monster clinic from the best clinicians of the world, scientific papers from the pens of the most noted and scholarly men of the profession, and an exhibit to excel all others.

The meetings, the section meetings, the clinics and the exhibits, will be held in the great Coliseum, where ample accommodations are secured.

Hotel Jefferson, the general headquarters of the Dental Congress, is one of the most fashionable and complete hotels in the West, if not in America, and is located on Twelfth Street, one block from the Coliseum. Hotels of St. Louis will be sufficient to meet all requirements.

The Information Bureau of the Exposition has a list of ninety-seven well-established hotels now doing business in St. Louis, with a capacity of 41,000 guests, at prices ranging from fifty cents a day up on the European plan, and from one dollar a day up on the American plan. These established hotels have been supplemented during the year 1903 by thirty-five new, permanent hotels now opening, or about to open, increasing the permanent hotel capacity to 67,000 guests, at prices ranging from one dollar a day up. The Exposition management holds the signed agreement of the leading hotels that "Rates shall not be increased during the World's Fair period." Prices are now lower in St. Louis than in any other city for similar hotel accommodations and service.

The Exposition Information Bureau's list of 132 permanent hotels includes only the better class. There are now 173 hotels, large and small, in operation in the city, and the new hotel enterprises being inaugurated justify the belief that the number will reach 250 on the opening day of the World's Fair.

Besides hotels with accommodations for more than 200,000 guests, the Exposition Information Bureau has a list of boarding-houses and rooming-houses of respectable character, on the street car lines, with lodgings for 65,000 guests, and a list of private houses that will let rooms for 20,000 persons.

All over the city, apartment-houses and rooming-houses are available for those who prefer rooms away from crowds, with meals at the restaurants.

There are 485 restaurants in St. Louis that have a national reputation for good fare, good service, cleanliness and moderate prices. Twenty of these 485 restaurants can take care of 40,000 patrons.

The climate of St. Louis is temperate in summer and most delightful in the spring and fall. It is the most central and accessible of the four large cities of the United States, twenty seven railways entering it, and passenger steamers on the Mississippi reaching it from north and south.

World's Fair cheap rates on railways and steamboats will be offered during the whole Exposition season, as follows:

Rates adopted by the following associations: New England Passenger Association, Trunk Line Association, Central Passenger Association, and the Southeastern Passenger Association.—Tickets will be on sale from April 15th. Season tickets for eighty per cent. of double one fare, good to return until December 15th. For sixty days, one and one-third fares, not good to return after December 15th. For ten days, one fare, plus $2.00, from points within two hundred and fifty (250) miles of St. Louis. For fifteen days, one fare, plus $2.00, from points over two hundred and fifty miles from St. Louis.

St. Louis is the fourth city of the United States in point of population, having 750,000 people. Certainly no city is more attractive with interest for the student of nature, science, history, etc. There are twenty-four public parks, containing over 2,100 acres, all well improved.

The World's Fair grounds lie five miles from the river, on the western edge of the city, and are reached quickly and comfortably by steam railway and fast trolley lines.

The visitors reach the city through the largest and most beautiful railway station in the world. Thirty-two tracks run into the station side by side, and the midway, or glass-roofed hall in front of the gates to the trains, will hold 30,000 people. Most of the hotels, except those temporary ones near the World's Fair grounds, are within ten minutes' ride of the station, in the heart of the business district. Street cars, reaching all of the hotels for one fare, pass the station, and the cab, carriage and baggage system is excellent.

The great Music Hall and Coliseum building that is secured for the meetings of the International Dental Congress is downtown, on Olive Street, between Thirteenth and Fourteenth Streets, within easy walking distance of Union Station, the hotels and the business district. It has a seating capacity for 8,000 people, with section rooms that will be arranged for the various committees and exhibitors.

Naturally, every member attending the Fourth International Dental Congress will wish to see the World's Fair. This will be the most magnificent the world has ever seen, and it will probably be the last great exposition to be held in this country for many years, because of the enormous expenditure of labor and money attending it.

Congressman Bartholdt, in a recent speech made before the Congress, said: "The Universal Exposition at St. Louis is the apotheosis of centuries of civilization. It is the culminating perfection of those wonderful international spectacles which have served to impress on our minds that it is good to be a living participant in the glories of this world. A decade of human achievement has elapsed since the Columbian pageantry of progress at Chicago. Every American who saw the 'White City' thrilled with the thought that the nations of the earth had assembled in the greatest republic to do homage to the genius of enlightenment. Triumphs of the Emperors of Imperial Rome were but the mock pomp of childish fancies compared to the triumphs of peace as celebrated by such a labor of love at St. Louis. On the May Day of this year the gates of welcome will be flung wide open and the vision of the century will then unfold its prophetic beauty for the uplifting of humanity. All in all, the Universal Exposition of 1904 will be the sensational climax of the twentieth century, the grandest victory of peace and civilization, the greatest triumph human genius has yet achieved. To millions of its visitors it will be an academy of learning, an inspiration and an inexhaustible source of genuine delight, and the memories of the 'Ivory City' will live and bear fruit in ages yet to come."

We appeal to all reputable, legally qualified practitioners of dentistry to interest themselves in the success of this great international meeting.

Let every dentist in America put forth his greatest effort to advance the cause. Make application at once through your state chairman for a membership certificate. See that your fellow practitioner is enrolled, and then, and not till then, will you have done your full duty.

The membership fee to the Congress will be $10.00. It will entitle the holder to the official badge and all the rights and privileges of the Congress. He will also receive one copy of the transactions. Without a membership certificate it will be impossible to get into the general meetings, sections or clinics, or attend any of the various entertainments given during the Congress.

This great Congress presents to the American dentist an opportunity to see and hear the brightest and most learned men of the profession from all parts of the world, men of international reputation that shine as clinicians, and men of great renown of the inventive turn of mind. This international meeting will be the Mecca of the profession of the world. We will all receive new light and be stimulated to a higher appreciation of our noble profession.

The local Committee of Arrangements and Reception, with its various minor committees, is working with increasing energy and will be ready to meet you and extend you a most hearty welcome.

Any further information can be obtained from the Committee: D. O. M. LeCron, Chairman, Missouri Trust Building; Max Fendler, Secretary, Missouri Trust Building; George H. Gibson, H. F. D'Oench, G. L. Kitchen, S. H. Voyles, Orem H. Manhard, Joseph G. Pfaff, Permanent Local Committee and Bureau of Information.

THE FOURTH INTERNATIONAL DENTAL CONGRESS BANQUET.

The Fourth International Dental Congress Banquet will be held on September 1st, 1904, at 8 p.m., in the Coliseum, adjoining the Congress Hall. The price per plate is three dollars. It is requested that all who expect to attend send their names and money to Dr. A. H. Fuller, P. O. Lock-box 604, St. Louis, Missouri, at once, and not later than August 20th. Arrangements to pay can be made with Dr. A. H. Fuller at the time of registration, provided notice is given before August 20th.

G. A. Bowman,
A. H. Fuller,
Adam Flickinger,
Banquet Committee.

Reviews

Anesthesia in Dental Surgery. By Thomas D. Luke, M.B., F.R.C.S.E., Assistant in the Dental Hospital, the Deaconess Hospital, and Instructor in Anesthetics to the University Surgical Classes, Royal Infirmary, Edinburgh. With 28 illustrations. Published by Redman Company, 10 West 23rd Street, corner 5th Avenue, New York.

This is the first work on local and general anesthesia prepared for the dentist. It is very entertainingly written, very exact in detail and fairly complete. Chloroform, ether, gas, ethel chloride, ethel bromide, cocaine, eucaine, etc., are all carefully discussed. A full description is given of how to administer each, what appliances to use, and where they are indicated. The technique of administration in each case is carefully given. The preparation and care of the patient are thoroughly discussed. It is the author's opinion that the continuous administration of gas by the nasal method and the addition of ethyl chloride to the list of anesthesics suitable for dental operations, places the dentist in the position to exclude painful operations from his practice altogether. The author hardly admits the administration of an anesthetic for any other purpose, except extraction. Although he admits that chloroform should not, or does not, need to be administered any more, except in rare cases, because there are few cases where more than a very few teeth need be extracted at one time. The work is a very safe guide in general anesthesia, but it might with advantage have been extended in reference to local anesthesia. The technique of local applications for sensitive dentine and mucous surfaces would have been a valuable addition. However, the book is a most valuable one, and should be carefully read by every young man going into practice.

Notes on the Treatment and Filling of Teeth. By Wm. Cass Grayston, L.D.S. Second edition. Published by the Dental Manufacturing Company, 6-10 Lexington Street, Golden Square, London, Eng.

This book of 270 pages does not pretend to be a treatise on operative dentistry, but is rather the technique of treating and filling teeth. It is simple, direct, straightforward, and to the point; no padding, no verbosity. Its teaching is good and very readable. It should be a most acceptable book for students who are just beginning their infirmary practice. All the ordinary operations in filling and treating teeth are minutely described. It is chiefly concerned with how to do things, not so much the reason. There is not a text-book which covers the same ground as this book.

The Dental Annual and Directory, 1904. Published by Bailliere, Tindall & Cox, London, Eng.

This is one of the most useful books published. It contains so many things that are useful to the dentist that it is impossible to enumerate them in a short review. There is a short review of the current literature of the year. The year's improvement in appliances and methods are fully reported. The dental hospitals and colleges of Great Britain get a full notice. The laws and punishments under the laws of the United Kingdom and the colonies are fully given. There is a directory of every registered dentist, giving titles, where obtained, and present address. Altogether there has been a great deal_of painstaking work in the preparation of such a creditable work.

Directory of Official and Voluntary Dental Associations and Societies of Canada

OFFICIAL

Nova Scotia Dental Board.

President—Hibbert Woodbury, D.D.S., Halifax, N.S.

Secretary—Geo. K. Thomson, D.D.S., Halifax, N.S.

Prince Edward Island.

President—Dr. J. E. McDonald, Summerside, P.E.I.

Secretary—Dr. J. H. Ayers, Charlottetown, P.E.I.

New Brunswick Dental Society.

President—J. W. Moore, D.D.S., St. John, N.B.

Secretary—Frank A. Godsoe, D.D.S., St. John, N.B.

Quebec Dental Board of Examiners.

President—G. E. Hyndman, D.D.S., Sherbrooke Que.

Secretary—Eudore Dubeau, D.D.S., 396 St. Denis Street, Montreal, Que.

Board of the Royal College of Dental Surgeons of Ontario.

President—H. R. Abbott, D.D.S., London, Ont.

Secretary—J. B. Willmott, D.D.S., 96 College Street Toronto, Ont.

Manitoba Dental Association.

President—G. J. Clint, D.D.S., Winnipeg, Man.

Secretary—G. F. Bush, D.D.S., Winnipeg, Man.

North-West Territories Dental Association.

President—R. C. McLure, D.D.S., Lethbridge, Assa.

Secretary—P. F. Size, D.D.S., Moosejaw, Assa.

British Columbia Dental Association.

President—T. J. Jones, D.D.S., Victoria, B.C.

Secretary—Richard Nash, D.D.S., Victoria, B.C.

Yukon Dental Board.

President—A. J. Gillis, D.D.S., Dawson, Y.T.

Secretary—J. D. Bell, D.D.S., Dawson, Y.T.

VOLUNTARY

Canadian Dental Association.

President—J. B. Willmott, D.D.S., 96 College Street, Toronto, Ont.

Secretary—W. Cecil Trotter, B.A., D.D.S., 412 Bloor Street West, Toronto, Ont.

Maritime Dental Association.

President— —. McArthur, D.D.S., Truro, N.S.

Secretary—G. K. Thompson, D.D.S., Halifax, N.S.

Dental Society of Western Canada.

President—S. W. McInnis, D.D.S., Brandon, Man.

Secretary—C. P. Banning, D.D.S., McIntyre Building, Winnipeg, Man.

Ontario Dental Society.

President—A W. Thornton, D.D.S., Chatham, Ont

Secretary—Guy G. Hume, D.D.S., 228 Carlton Street Toronto, Ont.

La Societe d'Odontologic Canadienne Francaise

President—Joseph Nolin, Montreal.

Secretary—Eudore Dubeau, 396 St. Denis Street, Montreal.

Eastern Ontario Dental Society.

President—W. J. Gunn, D.D.S., Cornwall, Ont.

Secretary—W. B. Cavanagh, D.D.S., Cornwall, Ont.

Western Ontario Dental Society.

President—J. Mills, D.D.S., Brantford, Ont.

Secretary—C. E. Snell, D.D.S., Essex Centre, Ont.

Brant County Dental Society.

President—John Mills.

Secretary—F. Britton.

London Dental Society.

President—A. E. Santo, D.D.S., London, Ont.

Secretary—S. Campbell, D.D.S., London, Ont.

Elgin County Dental Society.

President—H. A. Way, St. Thomas, Ont.

Secretary—E. Wilbur Honsinger, D.D.S., St. Thoma Ont.

Toronto Dental Society.

President—G. D. Martin, Toronto Junction.

Secretary—W. G. L. Spaulding, D.D.S., Yonge Street Arcade, Toronto, Ont.

Montreal Dental Club.

President—C. F. Morison. D.D.S., 14 Phillips Square, Montreal, Que.

Secretary—F. W. McKenna, D.D.S., Montreal, Que.

The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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All Communications relating to the Business Department of the Journal must be addressed to THE NESBITT PUBLISHING COMPANY, Limited, 44 Adelaide Street West, Toronto, Canada.

VOL. XVI. TORONTO, JUNE, 1904. NO. 6.

REPORTS OF COMMITTEES ON THE COMING CANADIAN DENTAL ASSOCIATION MEETING.

The officers and committees having this meeting in charge are putting forth every effort to make this meeting the most attractive and most instructive ever held in Canada.

The dates have been so arranged as to come during the Great Toronto Industrial Exhibition, when there will be extremely low excursion rates from all parts of the Dominion. The time of the meeting will also enable those attending the convention of the International Dental Congress at St. Louis to get back to Toronto in time for this meeting.

The Programme Committee have secured Drs. Godon and Viau, of Paris, former president and secretary of the International Dental Congress, held at Paris; and also Dr. Booth Pearsall, of Dublin, Ireland. Dr. A. H. Angle and Dr. R. Ottolengui have also signified their intention of being present to assist in the programme, which will also contain the names of many prominent Canadians.

The Clinic Committee are arranging the most comprehensive and instructive list of clinics ever presented in Canada, and they will consider it a favor if every dentist having anything interesting to demonstrate will immediately communicate with them.

The Royal College of Dental Surgeons of Ontario has also intimated that they will be thankful to receive any specimens of interest to the profession for safekeeping and permanent lodgment, in their museum at the College.

A final and more comprehensive programme will be issued about August 15th next. Yours fraternally,

W. Cecil Trotter,
412 Bloor St. W. *Secretary.*

PROGRAMME.

The Programme Committee is endeavoring to make this meeting the most attractive possible for the progressive dentist. The Canadian Dental Association was organized to broaden the views and usefulness of the profession of Canada. The programme prepared will undoubtedly carry out this idea. The section on clinics will cover every conceivable dental operation. The papers and addresses will cover dental education, artificial appliances for cleft palates, orthodontia, diseases of the antrum, pyorrhea alveolaris, artificial dentures, operative dentistry, dentists in the Canadian militia, and a report from the meeting of the Dental Councils of Canada on Dominion registration.

A. E. Webster,
3 College St. *Chairman of Programme Committee.*

CLINICS.

Clinics always attract as well as instruct. They will be a feature in the coming gathering. An opportunity is given every dentist (including the reader) to take part in giving a clinic or demonstration. Each clinician is requested to notify, as promptly as possible, some member of the committee of his intention or willingness to contribute. It is requested that a concise, written description be prepared and sent in to the Committee for reference and publication. Think over this opportunity, then prepare to favor your confreres with the results of your study and experience.

John E. Wilkinson,
402 Sherbourne Street. *Chairman.*

EXHIBITS.

All manufacturers of dental goods are invited to exhibit at the Canadian Dental Association Meeting. A special and interesting feature will be a collection of recently introduced instruments and appliances. Members of the profession who have new ideas in appliances are especially invited to take part in this exhibit. The committee also desires to make an exhibit of a copy of each desirable book published on dental subjects.

W. E. WILLMOTT,
Chairman. Com. on Exhibits.
GEO. GOW, *Secretary.*

Cor. Bloor and Yonge Sts., Toronto.

ENTERTAINMENT.

The Entertainment Committee is putting forth every effort to make the visitors to this convention feel very much at home during their stay in Toronto. Those attending the convention are invited to bring their wives and lady friends with them. Toronto will be found to be full of interest for the ladies. The Wednesday evening of the convention will be given up entirely to a Reception, to be held in the splendid parlors of the King Edward Hotel. Keep that evening free for this event, and have your ladies with you.

R. G. MCLAUGHLIN,
54 College St., Toronto. *Chairman.*

FIRST AND SECOND YEAR EXAMINATIONS OF THE ROYAL COLLEGE OF DENTAL SURGEONS.

JUNIORS PASSED.

S. W. Bradley, E. C. Jones, G. B. New, W. H. Geddes, D. W. Massey, W. J. Price, W. J. Garland, H. H. Kilpatrick, F. A. Axon, W. J. Bushnell, G. B. Tovell, W. R. Glover, J. F. Grant, J. W. Coram, G. M. Gorrell, G. F. Roulston, M. Gordon, A. M. Weldon, F. C. Harwood, C. Pritchard, E. H. Wilson, E. A. Wessels, W. C. Macartney, G. D. Smith, A. W. Forbes, E. A.

Grant, C. J. F. Jackson, J. L. Anderson, J. W. Clay, W. H. Doherty, C. G. Hartley, A. Jordan, G. Wilson, J. F. Taylor, W. Jeffs, F. A. French, D. D. Wilson, C. B. Stover, R. McGill, J. E. Middleton, J. A. Beatty, H. A. McKim, M. A. Fallis, J. T. Hackett, M. Hanna, E. B. Sparks, T. N. M. Smith, C. C. Nash, A. S. Elliott, L. D. Steele, J. M. Wilson, G. A. M. Adams L. J. D. Fasken, N. S. Coyne, H. M. Kinsman, F. L. Heath, J. M. Deans, G. C. Phillips, W. H. Reid, B. W. Linscott.

J. G. Manning passed in Intermediate Chemistry.

H. A. Edmonds, V. McGuigen, W. H. Plaxton passed final in Medicine and Surgery, Materia Medica, Operative Dentistry, Prosthetic Dentistry, Practical Bacteriology and Practical Metallurgy.

McGuigen and Plaxton also passed in Intermediate Surgery, Orthodontia and Bacteriology.

McGuigen also passed in Metallurgy and Histology.

Edmonds also passed in Practical Chemistry and Anatomy (Paper and Laboratory).

Plaxton also passed in Anatomy, Physiology and Practical Chemistry (Paper and Laboratory).

To Take Further Examinations.

Anatomy—Bothwell, Bruce, Callum, Campbell, Fowler, Henry, Keeley, J. F. McDonald, McManus, Rutherford, G. L. T. Smith, Stapells, Thomson, Watt, Woods.

Chemistry Theoretical Paper—Bothwell, Hill, Howlett, Keeley, Mills, J. F. McDonald, McMann, McMurray, Rutherford, G. L. T. Smith, Stapells, Woods.

Chemistry, Practical Paper—Becker, Fowler, Lester, McMann, McMurray, Pogue, G. L. T. Smith.

Chemistry, Practical Exam.—Campbell, Dolson, Hambly, Hull, Kelly, G. A. McDonald, Woods.

Chemistry, Practical Laboratory—Hull.

Physiology—Campbell.

Operative Dentistry—Bothwell, Fowler, Hambly, Rutherford, Stokes, Thomson, Watt.

Prosthetic Dentistry—Rutherford, Stokes.

Orthodontia, Paper—Fowler, Stokes.

Orthodontia, Technic—Campbell, Clay, Deans, Fowler, Rutherford, Stapells, Stokes.

Histology—S. N. A. Campbell.

Comp. Dental Anatomy and Bacteriology—S. N. A. Campbell.

To complete Freshman Technic—Campbell, Fasken, Fowler, E. A. Grant, Henry, Howlett, Hull, Keeley, Lester, Middleton, McKim, G. L. T. Smith, Stapells, Stokes, Thompson, E. H. Wilson, J. M. Wilson, Woods.

FRESHMEN PASSED.

J. C. Craword, J. A. Drummond, C. R. Rountree, A. G. Lindsay, B. E. Brownlee, R. M. Chambers, H. F. Goodfellow, W. B. Steed, A. H. Hertell, V. C. Marshall, A. W. Muir, R. J. Mumford, R. M. Graham, J. T. Grassie, G. N. Howden, D. H. Dow, C. D. Bricker, H. R. Luttrell, A. E. Proctor, F. E. Warriner, E. S. Ball, E. S. Best.

TO TAKE FURTHER EXAMINATIONS.

Anatomy—C. W. McIntyre, McMahon, Maxwell, Childerhose, Stokes.

Physics—Bannerman, Halnan, C. W. McIntyre, Martin, Childerhose, Daynard.

Materia Medica—Bannerman, F. F. McIntyre.

Histology—Bannerman, Childerhose, Daynard, C. W. McIntyre, F. F. McIntyre, McMahon.

Operative Technic—Childerhose, C. W. McIntyre, F. F. McIntyre.

Complete Practical Technic—Ball, Bannerman, Best, Bricker, Childerhose, Daynard, Dow, Goodfellow, Grassie, Howden, Luttrell, C. W. McIntyre, F. F. McIntyre, McMahon, Steed.

Editorial Notes

DR. W. R. HAMILTON, Stratford, Ont., died June 5th, 1904.

DR. J. A. MARSHALL, of Belleville, Ont., died May 30th, 1904.

DR. R. E. HENDERSON has opened a dental laboratory in Kingston. He will give chief attention to vulcanite work.

DR. A. W. HARLAN, who has been for so many years in Chicago, has removed to New York—No. 1122 Broadway, corner 25th Street.

THE Eastern Ontario Dental Society will meet in Kingston, July 14th and 15th, 1904.

DR. H. C. MCFADDEN, Assistant Chairman of the Fourth International Congress, wishes to extend an invitation to any Canadians who may attend the Congress to give a clinic. Write Dr. McFadden, 3505 Hamilton St., Philadelphia, Pa.

FOUR of the most prominent members of the faculty of the Pittsburg Dental College have resigned. because they could not tolerate the way some of the teaching was being done. Those who have resigned are: Dean, W. H. Fundenburg, J. H. Beal, Theodore Dillen and H. W. Arthur.

Correspondence

To the Editor of DOMINION DENTAL JOURNAL:

A banquet was tendered to Drs. Mills and Doyle here upon the occasion of their departure from the city. We were very much pleased to have a number of their friends from both east and west to help us give them a send-off; and although we gave them a good push, yet I don't think there was a member of the society that did not regret to see them leave, and everyone expressed his feelings to that effect.

Yours respectfully,

Brantford, Ont. A. ALMON BABCOCK, D.D.S.

LECTURESHIP VACANT.

Applications for the position of Lecturer on Physiology in the School of Dentistry of the Royal College of Dental Surgeons of Ontario, addressed to the "Chairman of Committee on Lecturers," 93 College Street, Toronto, will be received up to August 1st, 1904. Minimum duty each session, 50 lectures.

Dominion
Dental Journal

Vol. XVI. TORONTO, JULY, 1904. No. 7.

Original Communications

NEURALGIA.

By A. H. Peck, Chicago.

Read before the Ontario Dental Society, 1904.

From the earliest time down to the present, certain phases or symptoms of disease, the pathology of which has been either obscure or unknown, have been grouped under constantly changing general heads. A few centuries ago all manifestations of disease which could not be accounted for by inspection or by ordinary methods of reasoning were explained by the varying conditions of the humors of the body. But this method has had its day, and we now classify these disturbances as manifestations of a diathesis, *i.e.*, the responsibility for chronic rheumatism or gout is laid at the door of nerve irritation, such as uric acid or toxalbumen. Again, the circulatory medium becomes impoverished, and can no longer supply the nerves with necessary nourishment, and when the nerves cry out for the needed pabulum we call this neuralgia. Lodor says, speaking of this subject: " The longer I study this matter the more I am inclined to believe that a healthy nerve in a healthy perineurilemma does not ache, or if it does so the case is rare." This statement is confirmed by all my study, observation and experience. Since the term neuralgia is by no means absolutely definite, as it is generally used, would there not be some gain in confining it to the very few cases where nerves ache for no apparent reason?

For the present, using the familiar terminology, let us consider the sources of pain not directly traceable to a definite cause. In such cases our search for the source must be directed to the nerve itself, or towards irritating substances carried to the nerve through the circulatory fluids. In the first class may be grouped the following chronic inflammatory processes not classified as neuritis: old adhesions which are the result of inflammatory conditions, these results often being present long after cessation of the inflammatory process; changes in the perineurilemma, resulting from chronic rheumatism growths, which frequently occur in syphilis when periosteal nodes or inflammatory changes about canals cause pressure upon nerve trunks; reflex or referred pain, especially occurring about the fifth pair of nerves, of which more will be said later on; pain in the back, or bones, or in the back of the head, which may be classed as fatigue pains; paresthesia of various sets of nerves, under which would naturally come hysteria and neurasthenia.

Diathetic causes may be put in a separate class as follows: Accumulation in the perineurilemma and sheath of the various acids accompanying gout, autotoxins and poisons, such as copper, mercury and lead; cholemia, malaria, diabetes, syphilis, and anemia.

From conditions outlined in the two classes just mentioned we may derive a third class, viz., changes which occur more or less frequently in the blood pressure, also in the atmospheric pressure, and changes which take place in lymph constituents and lymph pressure as well. You will notice that in all this there is no mention of cries from the nerves directly connected with the ear, throat, nose, or eye, nor have we considered pain as directly caused by diseased conditions of the dental organs. Of this I shall speak later on.

Gray defines neuralgia as " functional disease of the sensory fibres of the peripheral nerves, and manifests itself by pains." As the term is generally used this definition is sufficient; but if one studies closely the various cases of pain emanating from a specific organ, or positively diseased part, it will be seen that the neuralgia, *per se,* is limited to progressively narrow fields, and that after careful investigation has been made, nearly all cases of pain are better classified under other heads than that of neuralgia.

If we would study this subject in a thorough and systematic manner, we must not lose sight of lymph stasis, of auto-nerve poisons, or of the effect produced by inflammatory adhesions, and by the products of and exudates remaining after inflammations, modifying or restricting the functioning of nerves thus hampered.

Let us now consider briefly the first cause of pain mentioned, viz., the local condition of a nerve which has suffered from inflammation, and the function of which has been more or less impaired as a result. It is quite patent that an individual who has once suffered with a severe attack of neuritis has within himself a safe index as to barometric and hydrometric conditions. If one remembers that after a nerve has suffered from a course of inflammation resolution rarely ever takes place perfectly, the above statement is not hard to understand. Three unnatural conditions usually follow the subsidence of the inflammatory process: a development of connective tissue in the neurilemma and perineurilemma, thickening and rendering less pliable the whole envelope of the nerve; and third, and perhaps more important than the other two, a partial vasomotor palsy and stasis in the intimate vessels of the nerve, consequent upon the general inelasticity. A nerve, under these circumstances, more or less thickened and possessing poor circulation, does not so readily accommodate itself to the varying swing of atmospheric pressure and moisture as it otherwise would. How well do we remember, from the study of atmospheric conditions during our boyhood days, that a man of 150 pounds' weight is under a pressure of 30,000 pounds, or 15 pounds to the square inch—this under normal barometric conditions of our latitude. If this pressure is suddenly changed, especially if it is lessened, a normal, healthy, vasomotor centre responds immediately, increases its grip upon the muscles of the blood vessels and the lungs without delay, hastily throw off the excess of gas, which, under the pressure of one atmosphere, is caused to be retained in the fluids, but which pressure is now somewhat reduced. This is not the action of nerves, the function of which has been so sadly interfered with, as is the case of those mentioned above. Because of their impaired condition as to elasticity and vasomotor control, they are subjected to undue pressure—pressure of blood and of gas—and the individual suffers acutely ofttimes before the storm breaks. Mills quotes from Mitchell and Catlin in his recent work on the nervous system and its diseases, and shows a diagram which seems to establish a close relation between pain and barometric pressure and the temperature. He says a moving space of the greatest barometric depression occupies the centre of the vast area of every moving storm, known as the storm centre, and which the rain generally precedes by from 500 to 600 miles, round about which is a forerunning area of neuralgia.

I have seen, and no doubt you have, more than one individual suffer these pains in the region of the face—facial neuralgia—from these causes and under these circumstances.

Healthy nerves make but a physiological note of lymph stasis, and the daily fluctuations in size of the brain and various portions of the body. But these fluctuating changes in the perivascular spaces and the lymph channels may, and frequently do, affect more or less seriously nerve trunks, which are hampered by being bound down with products of old inflammations, and with impaired vasomotor control. There occurs an ebb and flow of lymph thrice daily, and this, in connection with the diurnal ebb and flow causes a change of the size of various parts of the body, which is only a physiological change. The theory is now generally accepted as fact that the circumference of a limb varies perceptibly during the twenty-four hours, and is smallest in the morning at the time of the lowest temperature, and is largest in the afternoon and evening, when the daily temperature is at its highest point; and in this fact do we find an explanation of the statement that "rheumatic and gouty people, whose vaso-constrictors are more feeble, and whose lymph canals are especially prone to fill in the evening, experience difficulty in wearing articles of clothing in the evening which were comfortable in the morning." Does not the same character of reasoning explain why individuals suffer nocturnal pains occasioned by pulps of teeth that are no longer activity inflamed, but are surrounded by an area of lowered resistance, if not of actual infiltration? Until the lymph tide was recognized as a possible cause, the severe and somewhat mysterious ache present in Morton's metatarsalgia, which usually came on after sundown, and also after a full meal, was difficult of explanation.

The third division of causes for pain, viz., the various irritative substances in the blood, being first produced in the body by imperfect tissue metabolism, is receiving daily more and more attention, as investigators are continually searching deeper into the unknown realm of digestion and assimilation outside the intestinal tract. However, sufficient has already been gained to make it plain that the presence of certain substances in the blood that are inimical to healthy nerve life do cause pain. It has long been known that those who suffer with gout and rheumatism are especially prone to neuralgia. This is also true of alcoholics, syphilitics, and of those who suffer with intestinal fermentation. No one ever attempts to deny the fact that these disorders are potent factors in causing dyscrasia of the blood. One common, exciting cause of polyneuritis is diabetes. However, it is also true that nerve cries which cannot be ascribed to neuritis are caused by it. Von Noorden states that the earliest sensory disturbances to be found in diabetes are paresthesia, abnormal sensations and hyperesthesia of varying degree and location, and pain and cramps. It is also true that these neuritic symptoms appear very early, and are, indeed, not infrequently the first symptoms of which the individual complains, the painful areas being usually located in the trigeminal and in the crural nerves; but cases have been known in which the pains from these bodily disorders have been reflected to, and manifested in the fifth pair of nerves, and on receiving proper medical aid for the bodily ailments the individual has completely recovered.

Haig, in his last edition of "Uric Acid in Causation of Diseases," mentions uric acid as the cause of nearly everything from "gout to anemia, chlorosis to melancholia," and also of neuritis, or of nerve pain. The fact that facial pains, or odontalgia, is not caused by various diseased conditions of the dental organs alone, was years ago recognized by Marshall, and the same author also observed that many individuals suffering with gout would have odontalgia after having indulged in a heavy meal and champagne dinner; and this, too, when it was impossible to discover any diseased condition in the dental organs. Pope, to my mind, justly terms a combination of alcohol, tobacco and a late dinner a "powerful trinity in the causation of neuralgia."

I fain would go on with this line of reasoning, but I trust enough has already been said to convince you, if any need convincing, that all pains of a neuralgic character occurring in various portions of the face do not have their origin in diseased conditions of the dental organs. We must frequently look further for the cause of facial neuralgias. If we would practise intelligently we must study these various conditions and ailments, and study them in all their bearings.

Having dwelt at some length upon the general subject before us, let us now turn to that phase of this subject having special interest for the members of our profession, and consider neuralgia as it manifests itself in the face.

Facial neuralgia may be divided into two distinct classes: (1) The essential, neuralgia major or tic douloureux; (2) the simple reflex or neuralgia minor.

The treatment of tic douloureux is attended with great difficulty, as up to the present time the pathological lesion at the bottom of this disease has not been discovered. In its early stages it is almost always mistaken for simple neuralgia, as it very commonly begins in the upper or lower jaw in the vicinity of one of the teeth. In my experience I have never known it to begin in the teeth itself.

Sooner or later the pain spreads to other nerve branches on the same side of the face. Throughout many hours of the day the sufferer is racked by paroxysms of pain, occurring at regular intervals and lasting from a few seconds to many minutes. Sleep, except under drugs, becomes impossible; the patient dare not eat, talk or even smile for fear of inducing a paroxysm. Life becomes utterly unbearable, and is often ended by suicide. The character of the pain is described as that which would be produced by a red-hot electric wire plunged into the face, the current following the whole length of the nerve. At all times the pain seems to be below the skin. During the attack a breath of wind, the slightest touch of beard or hair, drinking, or even swallowing the saliva will increase the severity of the suffering. The affected area has a more or less pronounced red flush and the hair or beard may change color or fall out.

Prognosis of tic douloureux is very unfavorable; but a limited number of cases are cured by medicinal treatment, and surgical measures result in permanent cure only in exceptional instances.

The proper treatment of this form of facial neuralgia must include attention to constitutional conditions. Constitutional dyscrasia must be taken into consideration and treated hygienically and medicinally; indeed, attention to these is of far greater importance than treatment of the pain itself. Every possible cause of irritation must be removed, and the diet and general habits carefully controlled. A quiet life in a warm and sunny clime seems to benefit many of these cases, but does not cure when the ailment has already become pronounced. No drug is a specific, but carefully selected remedies often relieve and help. Of the homeopathic remedies the most useful are aconite, belladonna, arnica, and gelsemium given according to their several indications. Palliative medicinal treatment should be used; but I must protest in the strongest terms against the use of morphine and cocaine internally, as they cannot be curative and the danger of creating a habit is very great. The drugs of the coal-tar group have a palliative effect even in the later stages of the disease, and large doses of quinine often afford relief.

Counter irritation of the affected parts and cautery are of value, while an application of menthol in oil or of a mixture of equal parts of camphor and chloral rubbed up together sometimes affords relief. Freezing by means of ethyl-chloride spray will often give decided relief. When this is used the skin of the face should be protected by a thin coating of grease, the eyes carefully guarded, and the spray should never be directed against any one spot for more than three or four seconds. Galvanic electicity is sometimes curative, but usually it affords only temporary relief.

All other treatment failing, surgical measures are often useful, such as nerve stretching, nerve resection, ligation of the common carotid, and the excision of the gasserian ganglion. The first two methods often afford relief for months; but ultimately the pain recurs in almost every case. The removal of the ganglion is a dangerous operation; but by modern operative methods the fatalities are reduced to a very small percentage. While many of the best authorities consider this to be a sure cure for this most terrible disease, some of our present day surgeons state the operation fails in some instances to produce the desired result.

Neuralgia Minor.

We come now to the reflex form of neuralgia, more important to us, because the cure lies largely in our hands. Neuralgia minor, or simple reflex neuralgia, is the form of this ailment associated with and caused by disease in some organ. The pain may be entirely reflex, or may accompany pain in the diseased organ. For example, a patient will sometimes suffer from pain in some portion of the face, and at the same time be suffering from "an aching tooth"; or the pain may be present without any known disturbance in a tooth or other organ of the head.

This form of neuralgia can be cured if we can find the cause and the identification of the cause is our business as professional men.

Among the numerous causes, dental troubles rank first in number and importance, and thus this matter becomes one of great interest to us. But neuralgia minor may also be secondary to diseases of the eye, the ear, the tongue, the nose, and also to diseases of the thorax and abdomen. As we have seen, it is secondary also to anemia, diabetes, malaria, rheumatism. The discovery of the primary diseased organ is the first step towards a cure, and the greatest help in making this discovery is successful location of pain and sensitiveness. To demonstrate this tenderness pick up the tissues lightly between the finger and the thumb, and as soon as the tender spot of the face is reached the patient will be sure to inform you. Sometimes a slight pressure from the blunt end of a common pin will accomplish the end sought.

In considering neuralgia minor secondary to diseases of the teeth, we need to take into account all such diseases and the reflex which they induce.

Simple caries without exposure of the pulp usually causes local pain in the tooth. The pain may dart and shoot, but this darting and shooting is practically confined to the tooth; when, however, the pulp is exposed, we find the pain starting in the tooth, and then shooting to different portions of the head, face, ear or neck. Eating, or a change of temperature in the mouth, stimulates the exposed pulp, increases the pain or induces a paroxysm. By using the test given before, more or less tenderness of the skin may be found corresponding to well defined areas, and when such an area is reached the patient usually complains that a touch within these limits increases the pain in the tooth. It should be said that such tenderness does not arise until neuralgia has lasted several hours.

Only thorough familiarity with the reach and connections of the nervous system will enable us to locate the source of nerve pain. For instance, the maximum point in the hyoid area is the ear, and is particularly associated with the molars of the lower jaw. Hence, we may reasonably assume that a patient complaining of neuralgic pain in the ear may be suffering from irritation caused by disease of one of these molars, although a superficial examination does not locate areas of decay.

No possible cause of pain should be ignored in our diagnosis, and especially should we be on the watch for pulp stones or other hidden causes for irritation of the pulp. Where there is no toothache, but constant recurrence of neuralgic pain with superficial tenderness in some definite area of the face, we shall probably find among certain teeth, indicated by the pain area, the cause of the trouble. While the pulp is living and inflamed, reflex pains, accompanied by more or less superficial tenderness over segmental areas are almost sure to make their appearance; but when the pulp is dead and pericementitis or abscess forms the pain is usually local and confined to the tissues about the teeth. If, however, neuralgia appears it differs entirely from that produced by inflammation of the pulp, and is more like that from tic douloureux and superficial tenderness of the various areas is rare, Instead, the pain follows the distribution of the peripheral branches of the fifth nerve. Periostitis, or alveolar abscess, produces a reflex pain soon becoming neuralgic, either by involving the branches of the nerve in the inflamed tissues, in which case the pain radiates up the nerve, or by causing pressure upon the trunk of the nerves of the teeth, followed by pain in all the teeth of the same jaw.

In neuralgia secondary to diseases of the eye, the pain and tenderness are generally found over the eyes—the mid-orbital region of the forehead. If the pain is severe it tends to spread forward to the middle line of the forehead, and backward into the temporal fossa and upon the vertex. This form of neuralgic pain may be caused by errors of refraction, and also by numerous diseases involving the eye or optic nerve. Diseases of the eye sometimes produce tenderness in the teeth; but the tenderness is evidently reflex, as shown by changes in the position and number of the tender teeth coincident with changes in the condition of the eye.

Coming now to the consideration of neuralgia secondary to ear disease, we find that only when the middle ear is affected is pain reflex, and accompanied by superficial tenderness. For all practical purposes the sensitiveness of the hyoid area would indicate ear trouble, and when the sensitiveness extends to the vertical and temporal areas, as it sometimes does, it is in cases where the tension is so great in the middle ear that the existence of the ear trouble cannot be overlooked.

Malignant disease of the tongue may cause reflex pain of a neuralgic character in the ear or over the back of the head. If the disease involves the anterior portion of the tongue, the pain will be over the mental foramen; if the lateral portion of the tongue is affected, the pain will be in the ear and ramus of the lower jaw of the side affected. If the posterior portion of the tongue is affected, the pain takes the form of occipital neuralgia.

Nasal affections are rarely intense enough to produce pain, which may be called neuralgia; but when it does occur, this reflex pain appears over the front nasal and mid-orbital areas of the forehead, and is quite easily distinguished from other reflex pains.

The fact that the dental pulp does not possess the sense of touch, which is a localizing sense, renders it very difficult, in many cases, to locate the actual seat of dental neuralgias. The pulp, like other internal organs of the body, is not intended naturally to come in contact with foreign substances from without, and is thus not supplied by the human economy with the sense of touch.

Pain from any diseased condition of the teeth is liable to be manifested in many parts of the face other than the immediate vicinity of the diseased tooth; in fact, it may be set down as a rule that it will be manifested at some point more or less remote from the tooth, the pulp of which is diseased, rather than being manifested in the tooth itself. This will ever remain a most important factor in practice in connection with the diagnosis of facial or dental neuralgias. This is also true of the pains of hyperemic or inflamed pulps.

The pains which are manifested in the facial nerves, or the fifth pair of nerves, result from a great variety of causes. Not always, by any means, as we have already learned, are they the result of diseased conditions of the pulp themselves. But as frequently, perhaps, they are the result of diseased conditions of other portions of the system, or of some portion of the nerve trunk itself. This is another fact, or condition, which is very important, and one which must be constantly borne in mind in the endeavor to locate the cause of facial neuralgias.

The pains which are manifested in facial neuralgias are more frequently in connection with the second and third branches of the fifth pair of nerves, but are not always confined to these branches. The first branch of this set of nerves is rather frequently found to be the seat of the pains. Whenever the pain is manifested in the first branch it is usually of systemic or constitutional causes. These may be termed occult causes, which means those that cannot be seen, or hidden causes, as a diseased condition of a nerve trunk, or some adhesion binding it down in the process of recovery from an injury; while in connection with neuralgias arising from diseased conditions of pulps, the pains are almost invariably manifested in the second and third divisions. They may be in one or the other, or in both, and are nearly always to be found in the same side of the face in which the diseased tooth occurs, but in rare instances may be manifested in the opposite side of the face; while the pains of neuralgias from occult causes, systemic or constitutional, may be manifested in any portion of these branches and on either side of the face.

Pains occasioned by dental neuralgias are by no means confined to the face. If of long standing, they frequently extend down the side of the neck, being manifested in various portions of the chest, and not infrequently in the arms. The ear, also, is a frequent location for the manifestation of dental neuralgic pains. These pains are not necessarily constant, and most frequently are not, they being of a paroxysmal character, the paroxysms being inaugurated after a hearty meal, of from taking cold and hot drinks, thus subjecting the teeth to severe thermal changes.

True dental neuralgias usually come on slowly and gradually, while in nearly all cases from systemic or constitutional causes the pains are brought on very suddenly. The pains from dental neuralgias are aggravated a great deal at night, more so than during the day, when the individual is on his feet and moving actively about. At night the individual assumes the recumbent position, and the pressure of the blood throughout the face and various other portions of the head excites the paroxysms of pain; while the pains in connection with systemic causes may be constant during the day as well as the night, and especially is this true if the pains are being manifested in some part or other than the head. If the pains from constitutional causes are being manifested in the region of the head, they, also, will be more severe as a rule, when the individual assumes the recumbent position.

A difference of much importance in connection with the differential diagnosis of pains manifested from causes occult and those of dental neuralgias is this: Those of neuralgias from the former causes are, in most instances, manifested in the surface of the skin, the latter being exceedingly tender, because of the diseased condition of the nerves, the slightest pressure upon its surface causing severe pain. In connection with neuralgias, which are purely dental this is rarely ever true. The pains at various parts about the face or gums are seldom manifested in the surface, but are almost invariably deep-seated, being manifested deeply within the parts. Occasionally a tenderness will be manifested in the surface of the mucous membrane in dental neuralgia, especially opposite the inferior dental foramen where the nerve passes out of the body of the bone, and also, occasionally, about the region of the infra-orbital foramen. But these manifestations are of rare occurrence.

Individuals of a neurasthenic diathesis are especially subject to neuralgias. Many are born, seemingly, with this diathesis susceptibility to diseased conditions of the nerves. However, this condition may be acquired later on in life. Anemic individuals are especially liable to neuralgias, not only dental, but most any form of systemic origin. And those living in malarial districts are especially liable to neuralgias of various characters.

With this consideration of neuralgias in general, and these differential diagnosis points between general neuralgias and dental neuralgias, let us consider briefly some of the most common causes of dental neuralgias; and, first, let us never lose sight of the facts that at the best, the causes of facial neuralgias—the majority of which, perhaps, are dental—are not well understood; also that the number of cases of true neuralgia that develop from diseased dental organs is comparatively small, and that patients infrequently suffer neuralgic pains for weeks and months, when one is unable to locate the cause, or to ascribe any reason for their continuance.

Inflamed pulps are a frequent source of continued or concurrent reflex pains, the nature and characteristics of which make it proper to refer to them as neuralgic as the term is ordinarily used. Calcification of the pulp, in any of its various forms, frequently induces pains which are properly termed neuralgic. Another cause of reflected pains referred to as neuralgic is imperfect root-canal fillings. Not infrequently a small portion of the root-canals at their apices are not perfectly filled; moisture and other necessary elements accumulate and degenerate; gases form; in consequence pressure is exerted on the soft tissues in the apical spaces. The nerve filaments are thus disturbed and the result is reflected pains, ofttimes of a severe character—neuralgia, as we call it. Another cause of reflected pains (neuralgia), sometimes in its most aggravated form, is mechanical abrasion of the teeth. How often is observed a wasting, of especially the anterior teeth, by this process nearly to the gum line. Cases of this character have come under my observation in which it was necessary to devitalize the pulps of the anterior teeth of each jaw before a cessation of pain was effected. In such cases, where the pains are occasioned by diseased pulps, they will not always cease immediately upon devitalization. I have known the pains, in cases of long standing, to continue more or less severe for several days, gradually abating after a removal of the pulps. Not infrequently a lifting away from roots of teeth of the peridental membrane, by the burrowing of pus or the formation of phagedenic pockets, also from the absorption of the alveolar plates of bone, or by spiculæ of bone remaining and constantly irritating the edges of the peridental membrane, severe pains, taking on all the characteristics of those of true neuralgias, have been known to result. Excementosis of the roots of teeth is not an infrequent cause of neuralgic pain, more or less severe. Malposition of the teeth, especially of the third molars, has been known to cause neuralgic pains of the most aggravated form. The occusal surfaces of these teeth sometimes rest against the distal surface of the second molars, or the position of the teeth may be normal, the angle of the jaw being too short—as we refer to the condition—so that the parts about are severely crowded; the nerve trunks are thus subjected to constant irritation, resulting in severe pains.

Great as has been my demand upon your patience, this subject stretches out far beyond the treatment that I have been able to give it in this survey. There is a vast field here for the patient investigator, the faithful student, and as we press into it in the quest for new facts, we may be sure that every fresh discovery will add something to the sum of human happiness by helping to banish human pain.

Discussion.

Dr. G. S. Martin (opens the discussion).—We have just listened to a most excellent paper by Dr. Peck, and I assure you I feel very much out of place in attempting to open the discussion upon it. As commonly employed by the average person the word "neuralgia" is an exceedingly meanlingless term. Even in the mind of the dentist it is, I am afraid, a very indefinite word. We are accustomed to hearing our patients, particularly when they are a little afraid of the necessity of having to lose a tooth or two, ascribe the pain they have been suffering to neuralgia. Generally speaking, the term is applied to any acute, paroxysmal pain, presenting none of the phenomena of inflammation, except that of pain. There is a sense in which all pain is neuralgic, and in a broad sense it is not a disease at all, not a cause, but an effect. There are so many points of interest and importance in this paper that I am sure you will agree with me that is hard to know what to praise most. As the essayist was reading, and as point after point was made with bewildering rapidity, the same feeling comes over one that is produced in a gallery of noted pictures, each succeeding gem being so impressive as to push preceding ones into the background. As dentists we are probably most interested in the consideration of reflex pains in different parts of the body caused from lesions of the teeth, and also in the consideration of pains in the teeth caused from lesions existing in other organs of the body, frequently very remote. I very much regret that it was not until last night that a copy of Dr. Peck's paper came into my hands. I anticipate a very great deal of pleasure, as well as profit, when I have access to it in the columns of the Journal.

Dr. Clark.—I did not know till I picked up one of our programmes this morning that my name was associated with this paper as one of those to open the discussion upon it. I had time to glance over the first two or three pages of the paper, and soon found that it led me deeply into neural pathology, so far afield from our usual reading, that while I might enjoy the paper I could not in any way give it an off-hand discussion. I am sure I voice the thought of those present when I say that I look forward to its appearance in the Dominion Dental Journal, where we may read and study it. We hear numerous essays on filling the teeth, crown and bridge-work, orthodontia, etc., but how seldom do we hear anything of the subject of neuralgia. It is surely a great privilege to listen to a presentation of the subject so exhaustive, and so scholarly as that we have just heard. It was arranged to have Dr. Tesky present to take part in the discussion, inasmuch as it is a subject upon which he has devoted much study. However, something has prevented his being here. I cannot say that in my practice I have found neuralgia a common ailment. When a patient does complain of it I most frequently find it due to a large cavity of decay, well protected between teeth or under the free gum margin. Where I find no such cavity, I tap each tooth in the affected region to ascertain if any pericemental trouble is present. One or other of these conditions usually accounts for neuralgic pains in the region of the teeth. I have noticed that anemic patients were more susceptible to neuralgic trouble, and in such cases, in addition to my own treatment, I recommend that a physician be consulted. I regret that I have been unable to give this excellent paper a more fitting discussion.

Dr. A. E. Webster.—I would just like to say a few words on this subject. We have heard of how little we know of neuralgia, and it spoke very loudly in one direction to me. I mean to the extension of the course in dentistry. Are we capable of doing the best thing for our patients with our present knowledge. We are required to do something for our patients when they come to us. We must be able to make a diagnosis. They are frequently sent to us to find out if the cause of the pain is in the oral cavity. Unless we have such a knowledge of this subject as will enable us to make such a diagnosis, then it is necessary for our course to be so arranged as will enable us to make this diagnosis. There is lots of literature along this line and we ought to keep ourselves up with it. Sir William Bunton speaks of sensitive areas of the scalp occurring in conjunction with decay of the teeth. I know a man in this city who, when he finds a sensitive area on his scalp, has his teeth examined. Then there are other pains not perhaps mentioned in the paper, those of the uterine origin. One case of which I have had particular experience: An unmarried woman of 40 years came to me complaining of extreme pain in the region of the first molar, and which, she said, had been coming on occasionally for the past seven years. There was a small cavity in the crown originally, but it had been treated and filled. Afterward the pulp had been taken from the tooth, and the cavity again filled. Later, I had to take out the root filling and treat it again. The first time I saw the patient I said, "That is the tooth." I took the filling out, and the tooth did not get sore, but the pain was very severe. Then I opened into the alveolar process, between the roots, injected fluid through the crown, and it came out through the roots. After treating the case for three or four weeks and not getting any pus, I decided it must be something else. Gave a tonic, and then began treatment with aminol, and the pain subsided in twenty-four hours, and there has been no pain since. There was a case in which the patient fooled me right up to the handle, not intentionally of course. No other tooth had been treated before. Now, if we had a greater knowledge of this subject we would not need to go on and take out the root-filling as I did. Another point is that we ought to be able to recognize these pains, which come on slowly, and be careful to avoid the necessity for these pains. We recognize that once a nerve has begun to pain it is very difficult to unseat the trouble. The pain can go on for some time after the cause has been removed, as we know that nerves acquire the pain habit. Then, we should not allow anemic persons to get the nerve habit.

Dr. Cross.—Dr. Webster has spoken of itching of the scalp as a manifestation of neuralgia. To that I might say that fortunate indeed is it that the owner of every itching scalp is not a victim of neuralgia. Dr. Martin speaks of neuralgia as a great enemy of the dentists. Well, I do not know how many patients it keeps away from the dentists, I had not considered that point, but I have always looked upon the disease as a friend, an asylum of refuge to the perplexed dentist; yea, the very "shadow of a mighty rock upon a weary land." How else could we account for those excruciating pains and aches to which flesh is heir, so graphically described by Dr. Peck, and my good friend, Dr. Smith. We simply have to look wise and say, "Your trouble is neuralgia." That always does service when we cannot diagnose the case in point. Let me tell you of a very severe case of neuralgia that I was indirectly responsible for curing that parallels the dean's story of the western doctor, who allayed the consternation he had caused in the family upon declaring he did not know what was wrong with their very sick child, by saying, "I'll tell you what I *can* do. I can give it something to throw it into fits, and I'm a *corker* on fits." Now, a young lady, whose sister was employed in our home, had suffered for weeks with neuralgia, and her physician could not do anything for her. I suggested that the trouble was of dental origin, and her sister asked me to go to see her, and extract a troublesome molar, if possible. One very dreary, drizzly, stormy day, I went to her home, removed the tooth, and was glad to get away, as I could hear her screaming all my way home. I had thrown her into a fit. Her physician was hurriedly summoned, and evidently had no trouble in curing the fit, as she has been all right ever since. It was a complete cure, for she has been able to get married this winter. But what do you suppose her physician, the ungrateful wretch, thought of my assistance. "Why did you not have me extract the tooth?" was his plaintive comment. Probably if a safe medicinal agent could be had to translate neuralgia to fits, any family physician could relieve us of further trouble in the treatment of this very unsatisfactory complaint. (Laughter.)

Dr. Pearson.—When it was known by the committee who prepared this programme that we were to have a paper from such a well-known scientific investigator as the essayist, Dr. A. H. Peck, he was asked to give a short talk on methods of undertaking scientific work. This he did at luncheon this evening, and the truth of what he then told us is well illustrated in this paper just read. I think it is well worth while to emphasize the very thorough and lucid manner in which he proceeds in his work. He is dealing with pain and its causes, and he first tells us of the atmospheric changes in an area of several hundred miles which have more or less influence upon patients suffering from nervous diseases. These are influences quite external and beyond the control of the patient, yet to a very marked degree they intensify or diminish the suffering. From these influences he turns to those of an internal nature, dwelling upon the lesions of the nerve and nerve endings, and the effects on these of conditions more or less controllable by the patient. From these he proceeds to the effects and results of drugs upon the pathological conditions, until he has narrowed the field of investigation, and it means this or that definite conclusion, as the case may be. Could there be any better illustration of truth of things for truth's sake than the careful, sincere and earnest method of a scientific investigator.

Dr. Reade.—This paper is indeed very interesting. In replying, one only feels justified in emphasizing the interesting points. The treatment of neuralgia is something that brings the practice of dentistry very close to general medicine. In the treatment of this trouble the first indication for treatment is the general health, and the consequent increase in tone of the nerve tissue; when this general treatment does not alleviate the symptoms of the disease, then a local cause of the lesion must be sought. If we direct our attention to the nerve, the question arises, in what part of the nerve does the trouble exist? Is it in the nucleus, the nerve trunk, or its terminal branches? The pain of neuralgia is frequently caused by a new growth of bone pressing on the nerve as it passes through a bony canal or foramen. If such be the cause, then a cure cannot be effected until an operation be performed to remove the new growth, and thus relieve the pressure. The difficulty is to locate the cause of the disease. There are different methods of treating a neuralgia, as we have heard in listening to the essayist's paper. Nerve stretching is one method that I think was not mentioned. This stretching of the nerve is often followed by most encouraging results. I am very glad to have had the pleasure of listening to Dr. Peck's paper.

NORMAL OCCLUSION.

By Chas. E. Pearson, D.D.S., Toronto.

Read before the Toronto Dental Society.

There are none here to-night who will say that the teaching of dentistry is not progressive. The tendency of this progress must be toward some goal, some ideal, some definite and definable end, which all have at heart. What is that end? It is the esthetic and permanent restoration of what we call normal occlusion. Toward this ideal all operative dentistry is progressing.

Normal occlusion is a term not copyrighted by the orthodontal specialists, but is the common property of the common dental fraternity. The specialist in gold-filling, in porcelain, in crown and bridge-work, each and all have due respect for the contour of each filling, each crown, each bridge; and the contour of each tooth in proper contact with its adjacent fellow goes to make up the normal occlusion.

With this conception of the profession continually in the mind of the operator, the filling of proximal cavities and the restoration of contour in crowns become a matter of so vast importance and such grave responsibility to the operator that there should remain no possibility of the shadow of a doubt that we are performing services higher than those of any mechanical art; and to the orthodontist the profession bows and says: "You are right; teeth should not be extracted, or filled to prevent pain alone; they should be treated and contoured to preserve the normal occlusion and the facial form."

This is my first practical suggestion: That a patient will pay more to have the facial expression retained than to have a "hole plugged." Modern operative dentistry does more than prevent decay and pain; it prevents malocclusions. And so when an operator examines a mouth for the first time it should be not only with the view of restoring by filling the occlusion of individual teeth, but also the effect of such filling in the occlusion of the entire denture. The filling of a single tooth is of importance; of how much greater importance is its loss. So we see the basis of all operative dentistry is normal occlusion, and normal occlusion is apparently the least understood of all the fundamental principles of operative dentistry.

But there are orthodontists who have become such idealists—I may say such abnormal idealists—that they would twist a pig's ear into gobbler's throat tassle rather than have a superior central out of relation to an inferior first molar; and I want to tell such people that occlusion is not the only thing in the world; that people not of their kind, and with interests in the world quite as important, have been known to thank God that they had no occlusion, and have lived without any for twenty years. Others, again, would offer up praise if they had a little less, and had a little more facial beauty. So that one can never forgive the occlusion crank for making a typical " mug " out of a pretty girl. So far as my own observation goes, the loss of a few bicuspids, and the use of a retunding appliance would make a better looking monkey than has been. With all due respect to the age and ability and work of Dr. Kingsley and Dr. Angle, and no doubt others, they have made some hideous specimens by protruding one jaw where the opposite one required retruding; and this is shown by photos of their cases. And while I do not set myself up as exemplary, I am at liberty to express my own opinion—in fact, it is more than opinion, it is quite capable of demonstration—that all beautiful profiles have not normal occlusions and, conversely, all normal occlusions have not beautiful profiles. In this world " a thing of beauty is a joy forever," and I will take the beautiful face, and you can have the beautiful normal occlusion. The point I wish to make is that the face is always of greater importance to the world than the occlusion, and, if you can take half an inch off a face by a slight disfigurement of the occlusion, you will get more thanks and more praise and more pleasure than by adhering to a hobby and laboring for an unappreciated ideal. I would rather be an orthodontal artist than a yellow-journal, jingoistic occlusionist.

A paper such as this is supposed to clear up a great many difficulties in every-day practice; and as I am not a specialist on this subject I find it the greatest difficulty to instil into my patients sufficient vanity to warrant the expenditure of a few hundred in cold cash for the mere sake of having a tooth where it will chew tough beefsteak. Many prefer to gulp, and some get round it by living on eggs. No doubt the fault lies in my own want of business tact and persuasive power; but still the difficulty remains. I cannot put people in a canary cage for six months against their will, and at their own expense; and I mention this to learn how others succeed.

The difficulty of diagnosis is one which often requires days of thought, for it often happens that so slight an irregularity as an apparently unlocked lateral throws the entire occlusion into confusion, and the question arises, is the lateral right and the remaining entire denture wrong? Usually, of course, the lateral is out of place; but if the entire arch has to be changed to accommodate it, the patient objects to the time, the cost and the inconvenience. What is to be done? Is it right to sacrifice a bicuspid? Are you going to sacrifice your ideals and sacred, hard-earned principles and adopt an expedient you know to be bad practice? The occlusionist says, No! The artist may say, Yes! The quack never hesitates; extracts a bicuspid, or even a cuspid, or easier still, gets 50 cents for removing the lateral. Still, to the honest practitioner, this is often a difficulty; and one comes to the conclusion that a good conscience is a poor money maker; and the only solution to many difficulties is to have a weak conscience; and if you have that you are liable to damages for malpractice. So there you are!

Having concluded a diagnosis the next practical suggestion is the device for its correction; and this is much like a game of whist—when in doubt play trump; and the latest teaching says trump is the Baker anchorage. Now, the so-called Baker anchorage is nothing more or less than an accessory anchorage devised and used by Dr. C. S. Case for the last fifteen or eighteen years, and will no more accomplish all that is claimed for it by certain enthusiasts than will nature reduce a cuspid after the extraction of a first molar. So do not be misguided and do not be misled—the Baker anchorage will not cure a pain in your head.

There is only one sure way of devising appliances, and that is a thorough knowledge of the forces required in each particular case, and an understanding of anchorage which will sustain the force and direct it where desired. Experience is the only teacher and work the only practical suggestion toward accomplishment. Do not be in a hurry to get a thing done. Apply the force in as direct a line as possible, and wait. If the anchorage is solid, and the force applied, time will do the rest. If the anchorage gives way there is always a means of gaining accessory anchorage, which, if you are not familiar with, someone else is. Ask.

If things go wrong, it is generally due to a misdirection of force, due probably to a badly constructed appliance. To adjust an appliance and have the patient attend to it for three weeks without supervision is the surest way to get into difficulties. Watch everything carefully for the first week or two, until satisfied that only the force required is being applied. Pay no attention to the patient's inability to see the teeth move. Like cascarettes they work while you sleep.

Good models, carefully devised appliances, careful observation, accurate and frequent records of measurements, are my best practical suggestions.

THE PROPER AGE FOR CORRECTIING ANY IRREGULARITIES OF THE TEETH.

By R. G. McLaughlin, Toronto.

Read before the Toronto Dental Society.

The age at which irregularities of the teeth may be and are corrected to-day extends all the way from early childhood to that of middle age; and I have no doubt that so long as there exists ignorance and carelessness on the part of parents and guardians so long will this continue. Much has been said and written in past years on this subject, and although all agree that in early years the teeth are more easily moved from one position to another, yet many have taken the stand that there are other circumstances which indicate the postponing of the operation till the patient is somewhere in the 'teens—that at the latter age the patient will be more anxious for the correction of the deformity, and will be stronger physically to undergo the necessary annoyance and pain.

However, if the dentist has made a close study of the etiology of malocclusion, the development of the alveolus, the physiological changes due to and accompanying tooth movement, the laws of retentive and facial harmony, he will be forced to but one conclusion, that unless there be exceptional circumstances the proper time to correct the position of a wrongly placed tooth is when it has sufficiently emerged from the gum to retain a suitable attachment.

In the first place we know that at this early age the bony tissue surrounding the tooth is of such a soft and pliable nature as to offer so slight a resistance that frequently the offending tooth may be rightly placed in a few hours or days at most. We know from the study of the alveolar process that for some time after the eruption of a tooth that the sockets are quite loosely formed about it, nature apparently waiting till the position of the tooth has been finally determined before completing her work; so that in the early months of a tooth's history considerable movement is possible without bone displacement. The sockets, however, gradually fill in and fit the roots and necks of the teeth more closely with advancing age, greatly limiting tooth movement without displacement of the process. Now, as Angle tells us, if the teeth be moved to correct positions at this early age the normal deposition of bone. and development of the socket about the tooth will follow, while if the movement be delayed till the complete development of the alveolus it necessitates greater absorption as well as greater force in effecting the movement, and the redeposition of bone may be less staple in quality or even lacking entirely in some instances. This will account for the serious difficulty we have all experienced in retaining teeth in their new positions in the case of patients who have reached or gone beyond the age of maturity; the teeth often, even after long retention, refusing to become firmly fixed in their new positions.

There is another decided reason in favor of early treatment. In the case of a little patient of seven years we frequently find one or both of the lower lateral incisors erupting inside the arch, which being deprived of the wedging and retaining influence of these teeth soon succumb to the muscular pressure of the lips, and the spaces that should have been occupied by these teeth are generally entirely closed by the forcing together of the central incisors and cuspids on either side, thus diminishing the size of the whole arch. Now, we know that nature moulds the upper arch over, and in conformity with the lower; so that if we have a contracted arch with "bunched" teeth in the lower, we may usually look for a similar condition of things in the upper. Now, we have, as you see, this train of evil consequences that should and could have been avoided had those two offending lower lateral incisors been promptly attended to at the early stage of the trouble. This is but one illustration of the perniciousness of the advice too often given in the past, "To let nature alone and the teeth will straighten themselves.

In addition we should ever keep before us this important fact, that when these deformities of the dental arches are allowed to continue till the patient is nearing the age of maturity, not only will the whole dental apparatus have become greatly complicated but the facial contour and lines badly marred, and this lack of facial harmony so set and noticeable that sometimes years of attention and care are required to restore the normal features and expression.

Therefore, looking at this subject impartially from its various standpoints we may regard it as a law that the older the patient the longer will be the time required for treatment, the greater will be the obstacles to be overcome, the longer the period required for retention, and the likelihood of failure proportionately increased.

Clinic at the Ontario Dental Society.

SEALING ARSENICAL APPLICATIONS INTO CAVITIES DIFFICULT OF ACCESS, OR EXTENDING BEYOND GUM MARGIN, OR BOTH.

By R. E. Sparks, Kingston, Ont.

Prepare the cavity margins for permanent fillings. If gum hemorrhage ensue, pack with cotton saturated with adrenalin chloride, while preparing application and filling. When everything is ready, remove cotton, syringe cavity with warm water, lay in a piece of asbestos felt, about large enough to cover the floor of the cavity; cover the cervical wall of cavity with amalgam until the filling reaches beyond gum margin; press the asbestos felt away from the floor of the cavity, and place the application in position. Press back the asbestos felt over the application, and fill the balance of the cavity. When it is desirable to remove the nerve, drill down behind the filling, extending the cavity sufficiently to admit of direct access to the nerve canals, or, if sufficient enamel wall exists between the filling and the point directly over pulp chamber to warrant it, open through the fissures without any regard to the filling. This method protects the gum from action of arsenic, and simplifies the after-treatment.

Selections

KEEPING OF DENTAL RECORDS AND ACCOUNTS.

By Arthur D. Black, B.S., M.D., D.D.S.

Read before the G. V. Black Dental Club of Chicago.

Before presenting in detail a very simple system of record and book-keeping for the dentist, I wish to mention a few reasons why we should keep accurate records of operations performed, how such records will be of value to us in building up a practice, and may, at the same time, be of value in the advancement of professional work. There are many reasons, both from a scientific and a business standpoint, why we should keep a careful record of our various operations, and, in some cases.

the various steps of individual operations. From the scientific standpoint, we will be able to look back over our work after a few years, and to know what methods of doing certain things are best. We will also be able to compile facts that may be of assistance to us in improving our methods, and thus enable us to give better service to our patients. If we should keep a careful record of the apparent cause of decay of each cavity that presents for filling, it would in time become valuable. For example, if we should find that out of a thousand cavities examined sixty or seventy per cent. of them are cavities that had been filled before, that fact alone would be a severe criticism on the methods employed in the operations. If our record should show that half of this number of failures seemed to be due to a lack of extension for prevention, and we could also show a record of the examination of a similar number of fillings in which the plan of extension had been followed, with a much smaller percentage of failures after a given number of years, we would have an excellent argument in favor of extension. If we should divide the records of the proximal cavities in the back teeth into two groups, in one of which we used all cohesive gold, in the other non-cohesive on the gingival wall, the camparison of failures and successes might teach us something. Or, if we are using both the crystal and the foil golds, records of the fillings made might show an advantage of one over the other as time goes by. If we should keep a record of the estimated number of pounds used in malleting each filling, the results would, after a few years, determine the blow that is sufficient to condense gold properly. You may say that many of these questions have already been answered. Even admitting this to be the case, I believe the conclusions were only reached by the careful recording of observations for many years, and I am sure that there must be many things of value yet to be learned by the keeping of accurate records by a larger number of men. I have no doubt that many changes would be made in individual methods of practice, if not in the methods generally accepted by the profession.

It is not very uncommon in dental society meetings to hear the argument that a certain method of manipulating gold is the best because the speaker had examined such a filling that had been inserted twenty years or more and was still in perfect condition, or that porcelain inlays preserved the teeth better than gold fillings because an inlay, inserted ten years ago, is at the present time in better condition than a gold filling inserted by the same operator in the same month about the same time. We overlook the fact that there may be particular reasons why individual operations last or fail, and that these reasons cannot be applied to all. These things only add emphasis to the fact that it is only by the accumulation of a very large number of cases by many different men that such information attains its greatest value.

Aside from all of this, for the individual dentist there are at least two excellent advantages in keeping careful records: First, the keeping of accurate records of what we do and see will teach us to be more observing, and nothing should be cultivated more thoroughly in the professional man than the power of observation; second, if we make it a rule to examine our operations carefully after they are completed, noting the imperfections, there will be a decided tendency to be more careful and perform better operations. I should state here that the system that I have to present does not include the recording of all of the information suggested, although it can be easily expanded to do so by those who desire.

From the business standpoint there are also good reasons for keeping accurate records. It must not be a very uncommon occurrence for the man who has been in practice a few years to have a patient return with a filling that has come out and believing that it is one of his fillings. By reference to his record the dentist should be able to know in an instant whether he placed the filling or not. If he did not, the record must clearly show the fact, and will be a convincing argument, whereas, his word or belief alone would not convince, because he might not be positive about it himself. Occasionally a patient will present with an abscess from a pulp that has died under a filling, and may return with a feeling that you are to be blamed for the trouble. Possibly, by consulting your record, you find that you placed a non-conductor under the filling, and by exhibiting your record and explaining that you had used your best judgment and every precaution to save the pulp, you convince him that you did what seemed to be best at the time, and he is satisfied. The case is treated and the bill rendered and paid, as it should be. Patients are very apt to be mistaken as to the time that may have elapsed since certain fillings were inserted, and records will always clear up misunderstandings arising on this account. When a patient comes in with a filling that has failed, and honestly thinks that it was placed within the last year, there is no argument, without the written record, that will convince him that it was inserted ten or fifteen years before, as might be the case. Possibly the next tooth was filled recently, and the record would show that fact also.

In treatment cases of all kinds it is a good plan to keep a memorandum of what is done at each sitting, not only for the record itself, but to refresh your memory each time before seeing the patient. By glancing over the record while the patient is in your reception room, you have the entire history of the case fresh in your mind when the patient enters, and you are able to ask a question immediately which makes the patient understand that you know the condition existing, and makes him feel that you are interested in his particular case. Thus you have the opportunity of making each patient feel that you take a personal interest in the work you are doing for him. I am sure there is nothing more important than this from the business standpoint.

It is my custom, whenever a favorable opportunity presents, to show and explain to a patient his record as I keep it. The knowledge by the patient that such a record is kept creates a good impression. We are certainly able to render better service to our patients if a careful record is kept, for the knowledge of the previous treatment of a case is often important in deciding what should be done. We occasionally receive a request from a brother practitioner for the history of a certain case, and it is a duty we owe our patients and our brother dentists to be able to furnish the desired information.

No one will question the necessity of keeping accurate accounts. There are, however, many different plans by which accounts may be kept accurately, and some are more desirable than others. Several points should be considered. We should be able to tell instantly, without stopping to add up any figures, the amount due on any account. We should have a system that will keep everything in good business-like form, and yet require the least possible amount of time and book-keeping. We should have a system by which a close watch is kept on our collections. We should be able to check up our books monthly to guard against errors. We should be able to know at any time the condition of our practice from a financial standpoint; be able to compare the receipts and expenditures of the various months of each year, and of each month with the corresponding months of previous years. We should be able to keep a close watch on our expense account, to know where the increase in expenses occurs from year to year, and be sure that we are getting a return for the increase. We will, by this means, be able occasionally to reduce the amount that is being expended in a certain line monthly, and thus effect a considerable yearly saving. All of these things must be done by so simple a system that the average office girl can be thoroughly familiar with the entire scheme within a few weeks, and be able to attend to every detail, without it requiring much of her time.

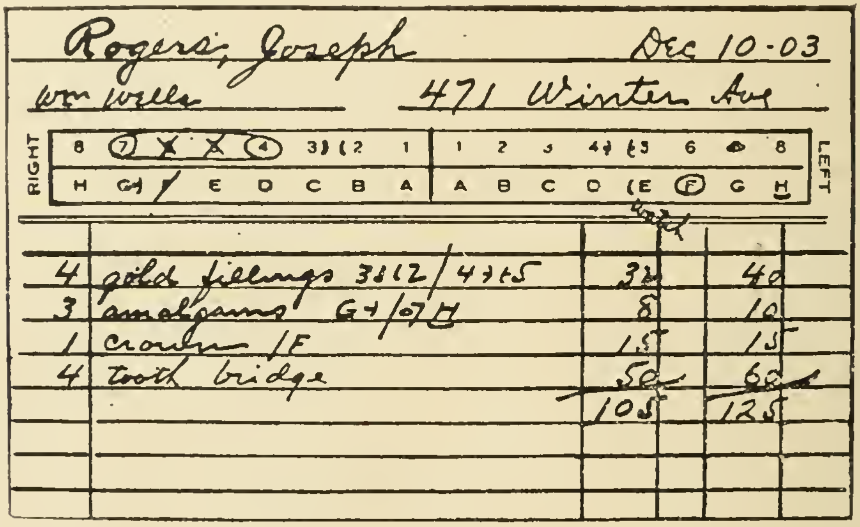
In presenting the system that I have been using since I started in practice, I wish to say that there is little in it that is original. It is rather a combination of the method of record-keeping used by my father for twenty-five or more years, with modern methods of book-keeping, and a method of handling collections used while connected with a business concern carrying a large number of credit and instalment accounts. I have made changes in and additions to many of the minor details.

I have adopted the modern card systems where there seemed to be a distinct advantage in their use, but have retained the old book forms for several purposes. In all cases where the records to be kept come naturally in chronological order and would be referred to most easily by keeping them in that order, it seems to me best to use a book form, as a day book or a cash book. On the other hand, where it is desirable to keep the records by individuals in alphabetical order, the card system is to be preferred, because with it the records or accounts can always be kept in their proper order, no matter how many are added or withdrawn. Much of the scheme here presented may, however, be used with the book or other plans. To make this article as brief as possible, I shall present only the plan that I use. This requires the use of the following cards and books, which will be described in detail: Examination cards, appointment book and day book combined, cash book, record cards, ledger cards, monthly summary cards. For each of these I have made up sample cards or pages for illustration.

Examination Cards (see Fig. 1).—This card is to be used whenever an examination is made, and as a rule a new card is to be used for each examination of the same mouth. Upon this card should be recorded everything that may be desired for future reference, both as to the existing conditions and any agreement or understanding of a business nature. The date, name and address should be written above the diagram. There is also a place for the name of the person to whom the service is to be charged, or the person who sent the patient, or any person given as a reference by the patient. On the diagram itself should be marked the necessary operations. The figures of the diagram represent the teeth of the upper jaw, the letters those of the lower, on each side. In marking this diagram the operator should be facing the patient, and consider the occlusal surfaces of all the teeth to be directly toward him. A buccal cavity in an upper tooth would be marked above the figure, while in a lower tooth it would be below the letter. A mesial cavity in a tooth on the left side would be marked to the left of the figure or letter, and a distal cavity on the same side of the mouth on the right of the figure or letter. A circle is drawn about a tooth to be crowned, an ellipse about a number of teeth to be bridged, teeth to be extracted are marked with a cross, missing teeth with a line through the figure, etc. A pictorial chart of the teeth, which would be preferred to the diagram by some, can be substituted for the diagram.

For examination of children's teeth there is another card, the only difference in the two being in the diagram, which has a hollow square to represent each tooth, instead of a figure or letter, and these squares may be filled in at the time of each examination with the characters representing whatever teeth are in place of either the deciduous or permanent set, leaving vacant squares where teeth are not erupted. I use the Roman numerals for the upper deciduous teeth, and lower case script letters for the lower.

Below the diagram there is sufficient room to make an estimate of the cost of the operations to be done, should the patient request it. If I have a patient of whose financial condition I am in doubt, I endeavor to lead him up to make a request for an estimate, as I think it is best in such cases to have an understanding beforehand. It is certainly better to do a smaller amount of service for a patient and have him satisfied than to do more expensive operations and have him go elsewhere next time. By knowing something of the patient's desires and ideas regarding the expense of the operations to be done, you can often change your plans to satisfy him. Whatever is told the patient regarding prices, no matter how indefinite, should be written on the card. If I say, "The operations of which I have made a record will cost from thirty-five to forty-five dollars," I write on the card, "Estimate, $35 to $45." If I say "about fifty dollars," I put it on the card that way. I also make memoranda on this side of the card indicating the progress of the operations, checking each as it is finished,



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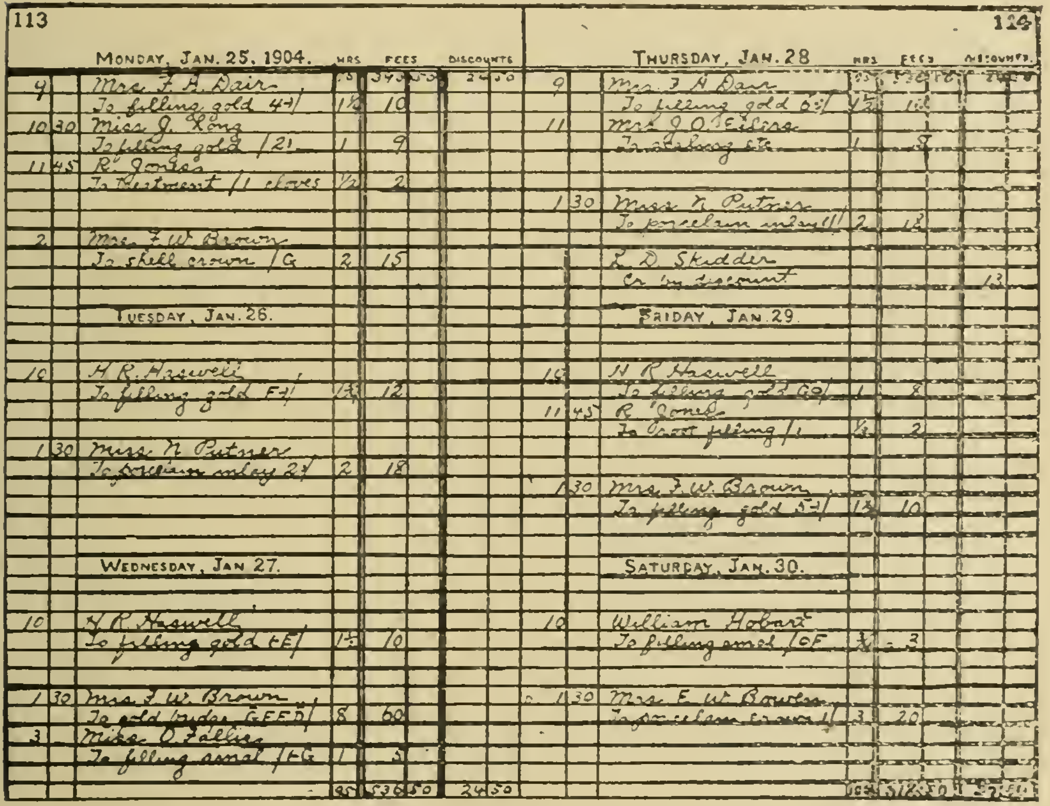
4	tooth bridge	50		60	
		105		125	

Fig. 1.—Examination Card, 3 x 5 inches, white. Kept in alphabetical order, with one set of A to Z guide cards. The figures on the chart represent the teeth of the upper jaw, the letters those of the lower, on each side. In marking this chart the operator should be facing the patient and consider the occlusal surfaces of all of the teeth to be directly toward him. On the above card it is supposed that Joseph Rogers, 471 Winter Ave., presented on December 10th, 1903, having been sent by Wm. Wells. Examination revealed the fact that he needed the following operations: Fillings in mesial of upper right cuspid, distal of upper right lateral, disto-occlusal of upper left first bicuspid, mesio-occlusal of upper left second bicuspid, occlusal of upper left second molar, mesio-occlusal of lower right second molar and buccal of lower left third molar; the upper right second bicuspid and first molar to be extracted and a bridge placed from the first bicuspid to the second molar; a crown on the lower left first molar. It is indicated that the lower right first molar is missing, and that the mesial surface of the lower left second bicuspid is in imperfect condition, but not bad enough to justify operation immediately, to be examined when patient returns in six months or a year. Patient desired to know how much the operations would cost. It was decided to place four gold fillings as indicated and these were estimated at from $32 to $40, three amalgam fillings at from $8 to $10, a crown at $15, and a four-tooth bridge at from $50 to $60. The patient was then informed that the operations indicated would cost from $105 to $125. See text for description of modification of this card used for examination of children's teeth, and use made of reverse side of examination cards.

and often note down peculiarities that I wish to remember when the patient returns. I also mark any surfaces, cavities or fillings that are not in perfect condition, so that I will be certain to examine them when the patient returns in six months or a year.

On the reverse side of this card are blank spaces for some very brief notations regarding general conditions noticed at the time of the examination such as the age, general health, care of the teeth by the patient, quality of previous operations, etc. I do not inquire the age of every patient, though I always do of children. It must make a child think you remember him a little better, if, after he has not been to you for six months or a year, you remark his age to him and possibly mention his birthday, having just glanced at the card a few minutes before.



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		MONDAY, JAN. 25, 1904.	HRS	FEES	DISCOUNTS
			76	395 50	24 50
9		Mrs. F. A. Dair			
		To filling gold 4+|	1½	10	
10	30	Miss J. Long			
		To filling gold |21	1	9	
11	45	R. Jones			
		To treatment |1 cloves	½	2	
2		Mrs. F. W. Brown			
		To shell crown |G	2	15	
		TUESDAY, JAN. 26.			
10		H. R. Haswell			
		To filling gold F+|	1½	12	
1	30	Miss N. Putnam			
		To porcelain inlay 2+|	2	18	
		WEDNESDAY, JAN 27.			
10		H. R. Haswell			
		To filling gold +E|	1½	10	
1	30	Mrs. F. W. Brown			
		To gold bridge GFED|	8	60	
3		Mike O. Fallis			
		To filling amal |+G	1	5	
			95	536 50	24 50

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		THURSDAY, JAN. 28	HRS	FEES	DISCOUNTS
9		Mrs. F. A. Dair	95	536 50	24 50
		To filling gold 5+|	1½	10	
11		Mrs. J. O. Eilers			
		To scaling etc.	1	8	
1	30	Miss N. Putnam			
		To porcelain inlay |1	2	18	
		L. D. Skidder			
		Cr. by discount			13
		FRIDAY, JAN. 29.			
10		H. R. Haswell			
		To filling gold G+|	1	8	
11	45	R. Jones			
		To root filling |1	½	2	
1	30	Mrs. F. W. Brown			
		To filling gold 5+|	1½	10	
		SATURDAY, JAN. 30.			
10		William Hobart			
		To filling amal |6F	½	3	
11	30	Mrs. E. W. Bowles			
		To porcelain crown 1|	3	20	
			106	612 50	37 50

Fig. 2.—APPOINTMENT AND DAY BOOK. Pages 9 x 13 inches, or larger, ruled with thirty-five or more lines to page. Each two pages divided into six days, so that a full week is in view wherever book is open. First columns on left of each page are used for hour of appointments, the centre of page for name of patient. A line is left below each name for the entry of the operation. The next column to the right is for the amount of time devoted to each patient, the next column for the fee, and the last column for discounts allowed. For example: On Monday, January 25th, Mrs. F. A. Dair had an appointment at 9 a.m. A mesio-occlusal gold filling was inserted in the upper right first bicuspid (the straight line, before or after the figure or letter indicating the tooth, represents the median line of the mouth as the patient faces the operator). This operation required 1½ hours and the fee was $10. On Wednesday, January 27th, the 8 hours' time for the gold bridge for Mrs. Brown covered all of the time spent in making and setting the bridge, a memorandum having been kept as the work progressed. On January 28th, L. D. Skidder called and paid his bill, on which a discount of $13 was allowed. This discount was entered on the day book as shown, and the cash paid was entered in the cash book. Each operation is posted from this book to the patient's record card, see Fig. 4. The time required for each operation and the fee are posted to the ledger card of the person who is to pay the bill; discounts are also posted to the ledger card, see Fig. 5. As each item is posted, it should be checked off on this book. The totals of the right-hand three columns of this book are carried forward to the end of each month. In the above illustration, up to January 25th, there were 76 hours of operating, $395.50 in fees, and $24.50 in discounts; at the close of the month, 106 hours of operating, $612.50 in fees, and $37.50 in discounts. At the close of each month, these totals are carried to the monthly summary card, see Fig. 6, January totals.

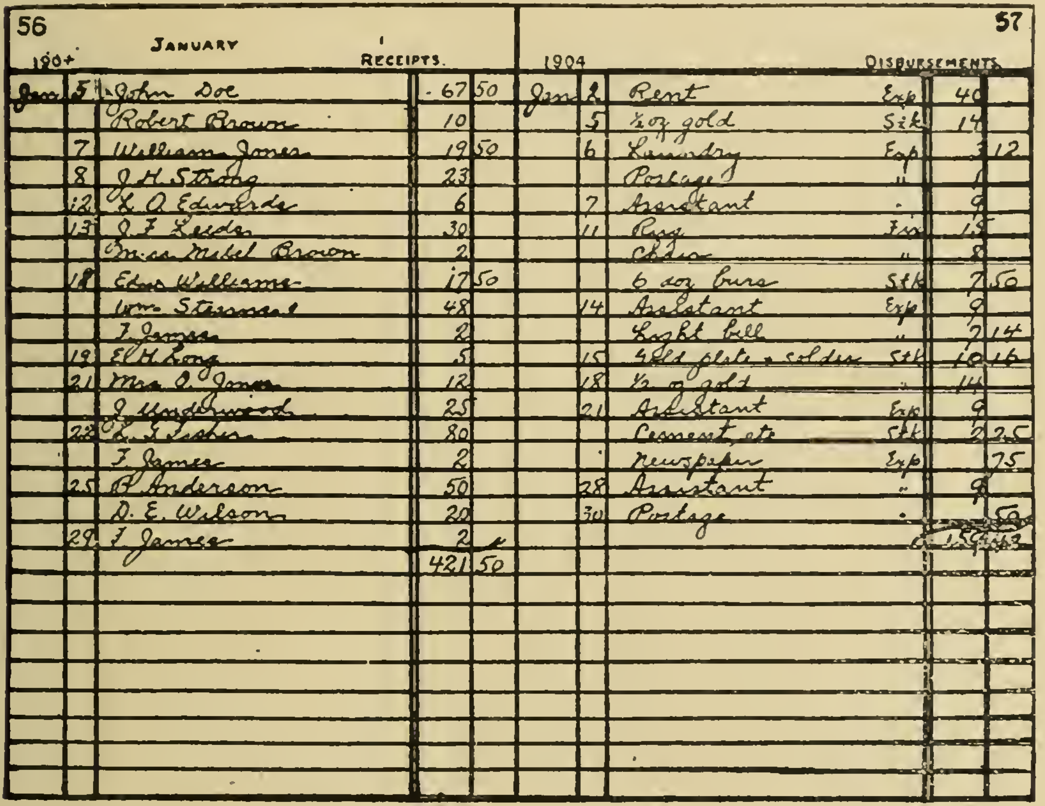
Care of the teeth by the patient may be recorded in a word—good, medium, poor, etc. If the record is bad and you give a child a scolding about it, he is entitled to a compliment if he returns a few months later and you notice an improvement. The general conditions of the teeth, as regards susceptibility and immunity to caries, may also be expressed in a word or two, simply your judgment as to the virulence of the disease. There is also a space for remarks on special conditions, diseases of childhood affecting the teeth, etc.

These cards should be kept in alphabetical order, with A to Z guide cards, and the several examination cards of each patient in order by dates, so that when a patient returns for examination, a glance at his examination cards brings the entire situation clearly to mind before the patient enters the operating room.

APPOINTMENT AND DAY BOOK (see Fig. 2).—I combine these two books, entering appointments as you would in an ordinary appointment book, and when the time arrives, the service rendered is entered on the line below the name, and the fee in the proper column. This plan saves writing each name twice. There is no objection to the use of a separate appointment book, if one so desires. Many prefer to carry a vest-pocket appointment book, so that appointments may be made anywhere that the opportunity offers.

I have not until recently been able to find a ready-made book with the days printed in and arranged in the most desirable manner; therefore, I have bought an ordinary day book, and my assistant has entered the days and dates with a pen. The book is arranged so that a whole week is in view wherever the book is open, Monday, Tuesday and Wednesday always occupying the left-hand page, Thursday, Friday and Saturday the right. There is a distinct advantage in this arrangement, as the same day of each week always occupies the same position on the page, and one is less liable to make mistakes in entering appointments. For one who operates on Sundays this arrangement could be slightly modified. A blank line is left below the name in entering appointments, to be used for the entry of the operation. There is a column to the left for the hour of the appointment, and one to the right of the name for the time devoted to the patient; the next column is for the fee, and the last column to the right for discounts. I presume that many dentists keep no accurate accounts of discounts. It will be seen later that it is necessary to do so if the books are balanced at the end of each month. The three columns to the right are added up and the totals carried forward to the end of each month, giving respectively the total number of hours of operating, the total fees and total discounts for the month. (Stationers have for sale an "Excelsior Daily Journal," No. 362, for the year 1904, which has each day and date printed in, and the arrangement is the same as the book I use. The journal also has at the back part pages for cash received and expended during each month. It would, therefore, very nicely fill the place of both the day and cash books here illustrated. The same book for 1905 will be No. 363.)

Cash Book (see Fig. 3).—This is an ordinary small cash book for entering amounts received and expended. The left-hand page is used for cash received and the right for disbursements. Each column is added at the end of each month, giving the total cash received and expended during the month. The cash expended is classified into an expense account, which includes all items that might be considered as dead expense, as rent, assistant, telephone, light, laundry, etc.; a stock account, which includes all materials, instruments and appliances, such as gold, platinum burs, instruments, etc., and a fixtures account, which includes items for furniture, permanent fixtures, etc., as the reception room, furniture, dental chair, cabinet, etc. By this classification a better understanding may be had of the expenses. The amount of the expense items for each month should



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JANUARY

1904			RECEIPTS.	
Jan	5	John Doe	67	50
		Robert Brown	10	
	7	William Jones	19	50
	8	J. H. Strong	23	
	12	L. A. Edwards	6	
	13	J. F. Leeds	30	
		Miss Mabel Brown	2	
	18	Edw. Williams	17	50
		Wm. Stewart	48	
		T. James	2	
	19	E. H. Long	5	
	21	Mrs. A. Jones	12	
		J. Underwood	25	
	22	L. T. Fisher	80	
		T. James	2	
	25	P. Anderson	50	
		D. E. Wilson	20	
	29	T. James	2	
			421	50

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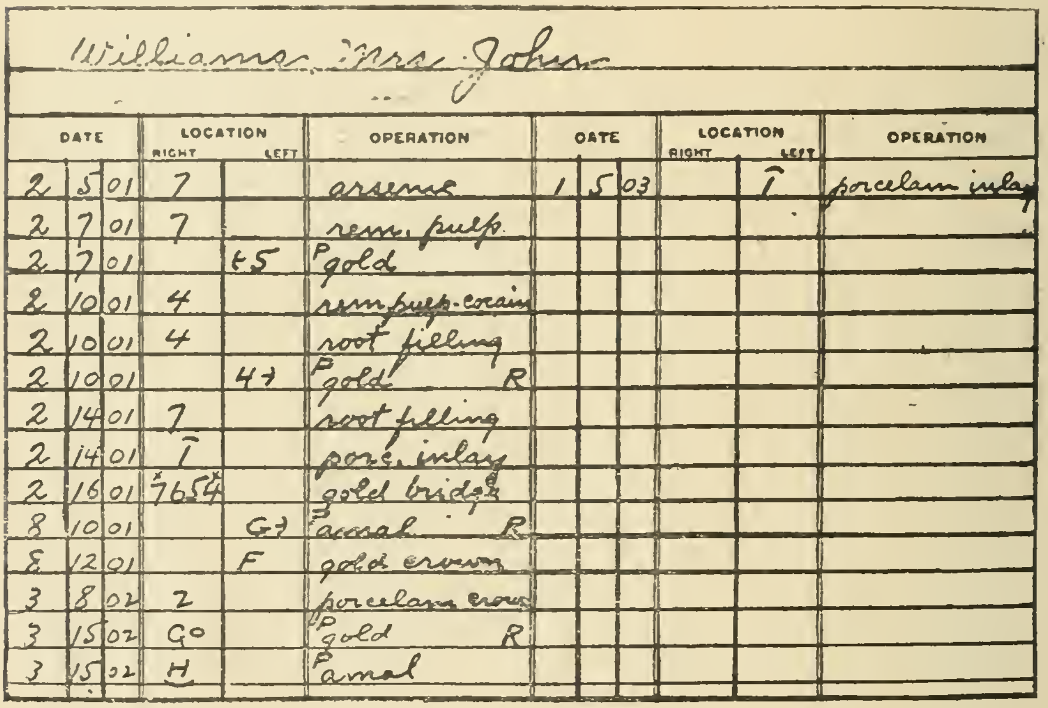
1904				DISBURSEMENTS.	
Jan	2	Rent	Exp	40	
	5	½ oz gold	Stk	14	
	6	Laundry	Exp	3	12
		Postage	"	1	
	7	Assistant	"	9	
	11	Rug	Fix	15	
		Chair	"	8	
		6 doz burs	Stk	7	50
	14	Assistant	Exp	9	
		Light bill	"	7	14
	15	Gold plate & solder	Stk	10	16
	18	½ oz gold	"	14	
	21	Assistant	Exp	9	
		Cement, etc.	Stk	2	25
		Newspaper	Exp		75
	28	Assistant	"	9	
	30	Postage	"		50
				159	43

Fig. 3.—Cash Book. Pages 5 x 8 inches, or any convenient size, ruled as above. On left hand page cash receipts are entered, with date, name and amount. Each item is posted from this book to the ledger card, see Fig. 5, and should be checked off in this book as it is posted. The total cash receipts for each month are carried to the monthly summary card, see Fig. 6, January total, $421.50. On the right-hand page of the cash book, disbursements are entered, with date and amount. Disbursements are classified into three accounts, expense, stock and fixtures (see page 354), and at the end of each month the total of each of these is carried to the monthly summary card. On the above month the total of expense items was $88.51, stock $47.91, fixtures $23, total expenditures for month $159.45, see Fig. 6, monthly summary card, January totals.

be practically the same for each month of the year. The amount of stock items should vary more or less closely with the amount of fees for the month, the largest items in this account being for materials, precious metals, etc. The fixtures account eliminates from the other two the occasional items for furniture, fixtures, etc.

Record Card (see Fig. 4).—These cards are printed on yellow board so that they will be easily distinguished from the ledger cards. The record cards are posted from the day book. Each operation performed is first entered on the line below the patient's name in the day book, and subsequently posted to the record card. The patient's name is entered on the line at the top of the card. The cards are kept in alphabetical order, so that each patient's record can be had in an instant. There is a column for the date of each operation, for the tooth or teeth operated upon, and for the operation. As on the examination card, the tooth is represented by its number or letter, with the location of the filling indicated. In the column for the opera-



Williams Mrs John

DATE			LOCATION		OPERATION	DATE			LOCATION		OPERATION
			RIGHT	LEFT					RIGHT	LEFT	
2	5	01	7		arsenic	1	5	03		$\bar{1}$	porcelain inlay
2	7	01	7		rem. pulp.						
2	7	01		ε5	^{P}gold						
2	10	01	4		rem pulp-cocain						
2	10	01	4		root filling						
2	10	01		4ɜ	^{P}gold R						
2	14	01	7		root filling						
2	14	01	$\bar{1}$		porc. inlay						
2	16	01	$\overset{x}{7}65\overset{x}{4}$		gold bridge						
8	10	01		Gɜ	^{P}amal R						
8	12	01		F	gold crown						
3	8	02	2		porcelain crown						
3	15	02	Go		^{P}gold R						
3	15	02	H		^{P}amal						

Fig. 4.—Record Card. 4 x 6 inches, yellow. Kept in two alphabetical groups, with A to Z guide cards, first group containing cards of patients for whom operations are in progress, second group cards of patients for whom operations have been completed for the time being or permanently. All items on this card are posted from the day book, see Fig. 2. The operations for Mrs. John Williams, as per the above card, are as follows: February 5th, 1901, arsenic applied to the upper right second molar; February 7th, pulp of this tooth removed, mesio-occlusal gold filling in upper left second bicuspid, filling polished; February 10th, pulp removed from upper right first bicuspid, using cocaine, immediate root filling, and gold filling in disto-occlusal of upper left first bicuspid, filling polished. This was a refilling indicated by the letter R. February 14th, root filling in upper right second molar, and porcelain inlay in labial of upper right central. February 16th, gold bridge from upper right first bicuspid to second molar, second bicuspid, and first molar dummies, anchor tooth indicated by a cross. August 10th, disto-occlusal amalgam filling in lower left second molar. This was subsequently polished, and was a refilling. March 8th, 1902, a porcelain crown was set on the upper right lateral. March 15th, amalgam fillings in occlusal of lower right second molar and buccal of lower right third molar, both polished subsequently. The filling in the second molar was a refilling. January 5th, 1903, porcelain inlay in labial of upper left central.

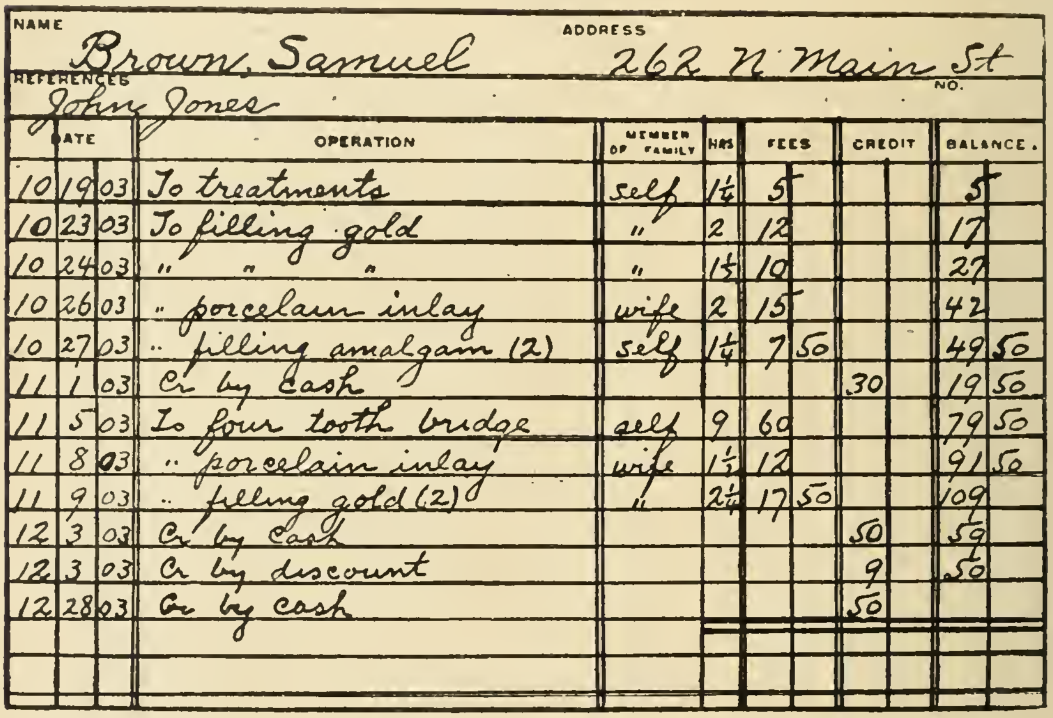
tion is marked the kind of filling—gold, amalgam or cement, etc. I enter a letter P when the filling is polished and a letter R if it is a refilling. If it is a refilling of one of my own fillings, the letter R is made with red ink. To enter a crown, the figure or letter indicating the tooth is entered, and the kind of crown mentioned—gold shell, Richmond, baked porcelain, etc. A bridge is entered in the same way, a little cross over the figure indicating each anchor tooth.

Most systems of dental book-keeping are arranged so that the record of operations is kept on the same page or card with the ledger account. The separation of the record from the ledger account is, I think, a decided advantage. Where you are operating for several members of the same family there is less danger of getting the records confused. The charges for the operations for the several members of the same family can be kept on one ledger card if desired, without any danger of confusion of the records. I occasionally show a record card to a patient and explain how it is kept. In doing this it is generally desirable to show only the record, and not the ledger account also, as you would have to do if they were together. Another reason for having them separate is that I sometimes enter on the ledger card something regarding the patient's finances, also memoranda of bills sent, promises to pay, etc., as will be described later.

Ledger Card (see Fig. 5).—These cards have room at the top for the name and address and references. I usually put down the telephone number also. There is a column for the date of each entry, the operation, member of family, time required for operation, and three columns, for fees, credits and balances. The operations, fees, and discount credits are posted from the day book, the cash credits from the cash book. With the entry of each item, either charge or credit, the balance or total amount due is entered in the last column, thus the amount due on each account is always figured, and can be seen at a glance. The time required for each operation, occupying the column next to the fee, enables one to quickly figure the amount charged per hour for any operation or for the entire bill. In posting items to the record and ledger cards, each item should be checked off in the day and cash books as they are posted.

On the reverse side of the ledger card is kept a record of the steps necessary to collect the account. Whenever a statement is mailed the date is recorded. Simply the date is set down, "3-2-'03," meaning that a statement was mailed on March 2nd, 1903. If on the first of the following month the bill was still unpaid, and another statement was sent, that date would be entered. If my assistant goes with the bill, she records that fact, with the date, and any promise she receives regarding payment. If she is told that the bill will be paid on the 25th, she records that on the card, and then turns to the 25th in the day book and enters the name there in lead pencil, so that she will be reminded of it when that day comes. If any letters are written or received regarding an account, a brief memorandum of their contents, or reference to the letters, is made on the card. Thus, by glancing over these entries on the back of the card we have a complete history of the case from the collector's standpoint.

The record and the ledger cards should each be kept in two separate alphabetical groups, the record cards of the patients whose work is in progress in one group, those of patients whose work is finished for the time being in another; the ledger cards of unpaid accounts in one group, those of paid accounts in another. By this plan there is a saving of time in selecting the cards desired.



NAME Brown, Samuel ADDRESS 262 N. Main St NO.

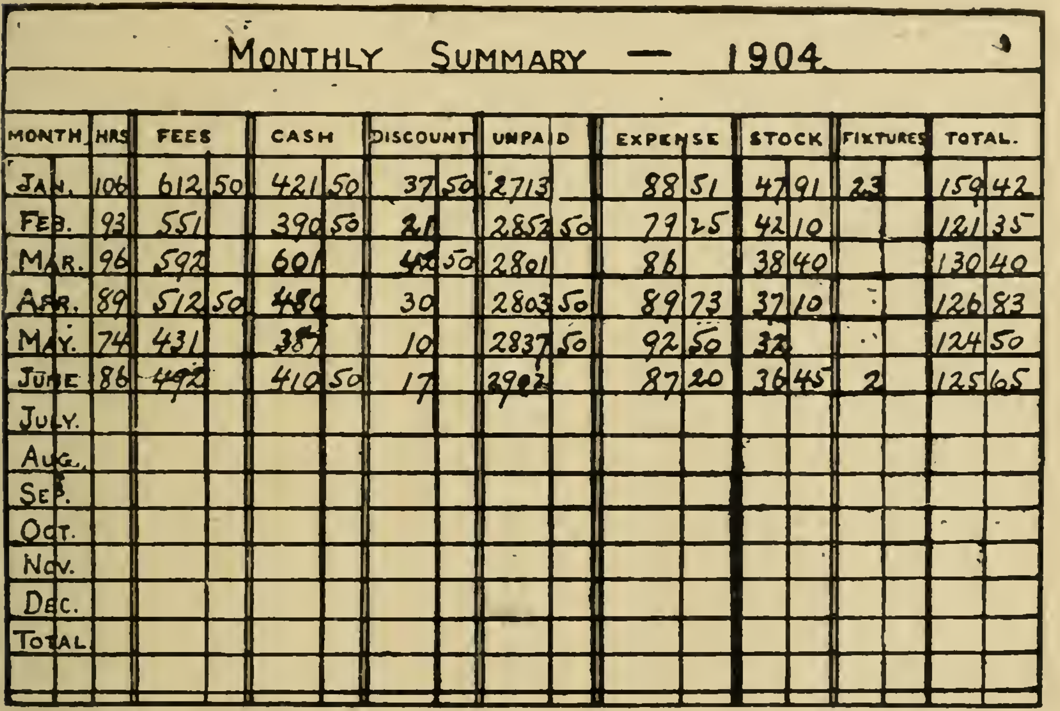
REFERENCES John Jones

DATE			OPERATION	MEMBER OF FAMILY	HRS	FEES		CREDIT		BALANCE.	
10	19	03	To treatments	self	1¼	5				5	
10	23	03	To filling gold	"	2	12				17	
10	24	03	" " "	"	1½	10				27	
10	26	03	" porcelain inlay	wife	2	15				42	
10	27	03	" filling amalgam (2)	self	1¼	7	50			49	50
11	1	03	Cr by cash					30		19	50
11	5	03	To four tooth bridge	self	9	60				79	50
11	8	03	" porcelain inlay	wife	1½	12				91	50
11	9	03	" filling gold (2)	"	2¼	17	50			109	
12	3	03	Cr by cash					50		59	
12	3	03	Cr by discount					9		50	
12	28	03	Cr by cash					50			

Fig. 5.—LEDGER CARD, 4 x 6 inches, white. Kept in two alphabetical groups, with A to Z guide cards, first group containing accounts that are unpaid, second group accounts that are paid. This card is made out to the person who is to pay the bill, there being a column for the entry of the name of the person for whom each operation is made. The amount of time required for each operation is posted in the column marked hrs., from the day book; the fees are also posted from the day book. Any discounts are posted in the credit column, also from the day book, see Fig. 2. Cash credits are posted from the cash book, see Fig. 3. The amount due on each account is placed in the last column to the right as each fee or credit is entered. In the above illustration the amount due October 27th was $49.50; on November 1st there is a credit of $30, reducing the balance to $19.50. On November 9th the balance was $109, which was reduced by a payment of $50 and a discount of $9 on December 3rd, and the remainder of $50 was settled by a cash payment on December 28th. As each account is paid in full, two red lines should be drawn below the last entry and the card placed with the paid accounts. See text for use made of reverse side of this card.

MONTHLY SUMMARY CARD (see Fig. 6).—These cards are made up for a comparative record of the business of each month. The monthly summaries for one year can be entered on one card. For each month is posted the total number of hours of operating, the amount of fees, the amount of cash received, the amount of discount, the amount of unpaid accounts at the end of the month, and the amount of cash expended, the expense items being classified as previously mentioned. Each of these columns may be added up with lead pencil after the entries for each month, giving the totals for each from the first of the year. With these cards a careful watch may be kept and comparisons with corresponding periods of other years noted; also the differences that occur from month to month during any year.

The use of this monthly summary card makes it very easy to check up your book-keeping at the end of each month—to know whether or not you have made any mistakes. The difference between the cash receipts and disbursements will show at any time the condition of one's cash account. What we wish to particularly guard against is any error in the posting of fees, discounts or credits to the ledger cards, and the following is a very simple method of doing so: If we take the amount unpaid at the end of any month and add to it the amount of fees for the succeeding month, and then subtract from this the



MONTHLY SUMMARY — 1904

MONTH	HRS	FEES	CASH	DISCOUNT	UNPAID	EXPENSE	STOCK	FIXTURES	TOTAL.
JAN.	106	612 50	421 50	37 50	2713	88 51	47 91	23	159 42
FEB.	93	551	390 50	21	2852 50	79 25	42 10		121 35
MAR.	96	592	601	42 50	2801	86	38 40		130 40
APR.	89	512 50	480	30	2803 50	89 73	37 10		126 83
MAY.	74	431	387	10	2837 50	92 50	32		124 50
JUNE	86	492	410 50	17	2902	87 20	36 45	2	125 65
JULY.									
AUG.									
SEP.									
OCT.									
NOV.									
DEC.									
TOTAL.									

Fig. 6.—Monthly Summary Card, 4 x 6 inches, white. (This is a ledger card, from which the printing has been erased, and a few extra perpendicular lines drawn for columns for fees, cash, discount and unpaid.) One card is sufficient for the monthly summaries for one year. For each month, the total numbers of hours of operating, the total fees and the total discounts are posted from the day book, see Fig. 2; the total cash receipts and the total expenditures, classified as described on page 354, are posted from the cash book, see Fig. 3. To get the amount unpaid at the end of any month, add the total fees for that month to the amount unpaid at the end of the previous month, and subtract the amount of cash receipts and discounts. Example: The amount unpaid June 30th, in the above illustration, would be obtained as follows, amount unpaid May 31st, $2,837.50 plus fees for June, $492, equals $3,329.50, from which subtract the cash receipts, $410.50, and the discounts, $17 for June, equals $2.902, amount unpaid June 30th. The total of the balances due on the unpaid ledger cards at the end of each month should exactly correspond with the amount unpaid on the monthly summary card.

amount of cash received and discounts allowed, we get the amount unpaid at the end of the next month. The balance due on each ledger card (the unpaid accounts all being together in one group) is set down, and the total should be the same—the total amount due at the end of the month. If the total, made up of the balance due on each card, does not agree exactly with the total amount due as figured from the totals on the monthly summary card, there must be an error. If a card on which the account was not fully paid should be accidentally placed among the paid accounts, the total amount due at the end of the month, as figured from the cards, would be short, and it would therefore be necessary to find the misplaced card before a balance could be obtained.

In using a card system one should have a drawer, or a card cabinet, in which the cards may be kept in a convenient place for reference.

In closing, I wish to call attention to the importance of filing letters and invoices. Letters may be filed alphabetically in an ordinary letter file. Where a typewriter is used it is customary to make a carbon copy of each letter written, and file these carbon copies also. For the ordinary correspondence of a dentist it is probably sufficient to make a memorandum on each letter indicating the reply that has been sent, or, in the more important cases, a copy of the reply may be made and filed. Invoices and receipts should be filed so that they may be found quickly in case of error or when it is desired to look up the cost of some article. There are several methods of filing invoices, any of which are good. I use an ordinary scrap-book and paste the invoices in. They are indexed in the front of the book.

It may be thought, from the many little details mentioned in this article, that the whole scheme is too complicated to be easily carried out. I wish to emphasize the point that it is so simple that the average office assistant should be able to carry out every detail of it after a few weeks. My assistant keeps everything, from the original entries to the making out of the monthly summaries and trial balances, and does it easily in the spare time she has each day. It is a rare thing for the complete posting of my books to be more than twenty-four hours behind the operations. I might add that the daily posting of any set of books is one of the most important items in making it a success.—*Northwestern Dental Journal.*

TEMPORARY AND PERMANENT FILLINGS AS BARRIERS TO BACTERIA.

By A. E. Webster, M.D., D.D.S., L.D.S., Toronto, Canada.

The attention of the profession has never been called to the possibility of many fillings, both temporary and permanent, not being barriers to bacteria. The experiments here reported cover quite completely what are known as temporary fillings, such as sealings for dressings, etc., and to a limited extent root canal fillings, and what are known as permanent fillings, cements and amalgams.

TEMPORARY FILLINGS.

In discussing the question of temporary fillings used to seal dressings into root canals, it is taken for granted that the most desirable substance is that which will absolutely prevent the fluids of the mouth from getting into the canal under treatment, or the contents of the canal from escaping into the oral cavity. Of course the material which is the most easily manipulated is preferable if it has the above qualities. So that it may be positively shown that the materials used to seal dressings into teeth, or used to fill teeth and root canals, have or have not the power to prevent the passage of bacteria; the tests must be made in the laboratory. It would be wholly impossible to do accurate work in the mouth, because there are besides many other complicating conditions, certain vital influences which cannot be accurately foretold. But to prove the plain scientific fact as to whether bacteria can be dammed out of a root canal by cement or gutta-percha must be done in the laboratory. If all the conditions are made the same as those in the mouth except the vital, which is a variable one and cannot be depended upon in the treatment of any case, the results must be of practical value. The fillings used in these experiments were inserted so far as possible under the same conditions as those that exist in the mouth.

Glass tubes, with a fourth-inch bore and about two inches long, sealed at one end and a slight constriction about a quarter of an inch from the other, were filled with bouillon, or beef broth, up to the constriction and the open end plugged with cotton. These were sterilized on three consecutive days. The cotton plug was then removed and the sealing or temporary filling inserted, using ordinary care and cleanliness. After the tubes were filled they were immediately immersed in a beaker of freshly collected saliva. The tubes were allowed to lie upon their sides so the bouillon might come in contact with the stopping. The beaker containing the tubes was placed in the incubator at 37 C.

and at the times stated in the following tables the tubes were taken from the saliva and examined as follows:

Sterile water was allowed to flow over them. They were then wiped dry and with a file the tubes were nicked at the neck and the end broken off with a blow from the file, thus exposing the bouillon. Three loopfuls of this bouillon were then spread upon agar, the test tubes containing the agar were placed in the incubator and examined at intervals until it was certain that no growth was likely to occur. Where a growth occurred it was in many cases stained, and examined under the high power of the microscope. Control tubes were carried through with many of these experiments. These tubes were put through the whole process except the immersion in the saliva. Thus if these tubes which were not put into the saliva were not infected, and those which were put into the saliva were infected, there is only one conclusion, and that is that they were infected from the saliva. Besides this a beaker of bouillon was infected with bacillus pyocyaneus, which imparts a distinct green color to the media. Tubes immersed in the solution become infected with this organism.

A good deal is sometimes said about the advantages of one sealing material over another. So that a basis may be had for a conclusion on this point, and also to illustrate many others; below is a full report of Series D, where all the tubes were put into the same beaker of saliva at the same time and tests made of each variety at the same time.

SERIES D.

GUTTA PERCHA.

10 tubes put into saliva.

In 24 hours 2 tested, both infected.
In 48 hours 2 tested, both infected.
In 72 hours 6 tested, all infected.

TEMPORARY STOPPING.

10 tubes put into saliva.

In 24 hours 2 tubes tested, both infected.
In 48 hours 2 tubes tested, both infected.
In 72 hours 6 tubes tested, all infected.

OXYPHOSPHATE (WESTON'S).

10 tubes put into saliva.

In 24 hours 2 tested, both infected.
In 48 hours 2 tested, both infected.
In 72 hours 6 tested, all infected.

COTTON AND SANDARAC.

4 tubes put into saliva.

In 24 hours 3 tested, all infected.
In 48 hours 1 tested, and infected.

OXYCHLORIDE (AMES').

In 24 hours 2 tested, no infection.
In 48 hours 1 tested, no infection.
In 72 hours 1 tested, no infection.

One tube broken.

In other series oxychloride has resisted infection for 60 days. There is no reason for believing that it will not stand out a much longer time.

VASELINE MIXED WITH COTTON AND WHOLE COVERED WITH CEMENT.

5 tubes put into saliva.

In 24 hours 1 tested, no infection.
In 48 hours 1 tested, and infection.
In 72 hours 3 tested, and infection.

To sum up—Gutta-percha, temporary stopping, cement, cotton and sandarac, cotton, vaseline and cement, or gutta-percha, are of no value to seal a cavity in a tooth to prevent infection from the oral cavity. A sealing that will not prevent the passage of bacteria for more than 24 hours cannot be depended upon, even if a disinfectant be sealed in the cavity, because most disinfectants sealed in the manner described soon become dissipated. Such a drug as carbolic acid sealed with one of the above sealings will lose its potency in from two to three days, and the cavity becomes infected. There are drugs, however, which will resist infection for weeks under such circumstances. Although the temporary filling materials mentioned may not have the power to prevent the passage of bacteria, they are not useless as sealings so long as the drug sealed in the cavity has the power to prevent bacteria from passing it to infect beyond.

It will be well to state at this time that all sealings of cotton or those containing cotton are objectionable, because they soon become saturated with saliva and food juices. They are really incubators. As they are squeezed in the act of mastication millions of bacteria are forced out to infect the alimentary tract, while more food juices are absorbed to renew the activity of the growth; besides this they allow the dissipation of the drug from the dressing and the re-infection of the cavity or root canal.

Oxychloride of zinc, which appears in Series D, did not permit the passage of bacteria. Nor has it permitted the passage of bacteria after being immersed in saliva for 60 days. From these experiments and many others it is clear that oxychloride of zinc is a safe sealing for all open cavities in teeth.

PERMANENT FILLINGS.

It is to the second subject under discussion that attention is directed most particularly at this time. "Do amalgams, cements and gutta percha, when used as permanent fillings or as root fillings, prevent the passage of bacteria?" Accurate technique was desired because these materials are used as mechanical plugs for cavities in teeth rather than depending upon any antiseptic quality the material might possess. In most cases where a temporary filling leaks there is still the disinfectant dressing to overcome before infection may take place, but not so with a mechanical filling.

Being satisfied that the foregoing experiments had some bearing on mechanical root canal fillings and cavity fillings further experiments were undertaken.

SERIES E.

Ten tubes made as Fig. 1 were filled with bouillon, mouth plugged with cotton and sterilized three consecutive days. Cotton plug removed from the neck, moistened with eucalyptus, then chloro-percha pumped into constriction and a gutta-percha cone made to fit and forced home, not using much heat, the packing continued until the gutta-percha was perfectly cool. The remaining portion of the tube was filled with cement (Ash). About twenty minutes after the tubes were filled nine were placed on their sides in a beaker of saliva, one held as a control, the tubes being completely covered. The beaker was placed in the incubator and tests made of the contents of the tubes as follows:

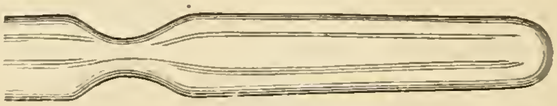


FIG. 1.

SERIES E.

In 1 day 1 tested, no infection.
In 2 days 1 tested, no infection.
In 3 days 1 tested, no infection.
In 4 days 1 tested, infected.
In 5 days 1 tested, no infection.
In 7 days 1 tested, no infection.
In 9 days 1 tested, no infection.

In 14 days 1 tested, infected.
In 17 days 1 tested, infected.
In 17 days control tested, not infected.

Series E having shown a protective power for root canal and crown fillings for only fourteen days, it was determined to insert some amalgam fillings, some cement fillings and gutta-percha root fillings, covering with cement, and gutta-percha root fillings covered with a layer of oxychloride and then oxyphosphate over all, using the greatest possible care in their insertion, as to mechanical correctness and technical correctness from a bacteriological standpoint.

Heavy glass tubes two inches long and one-quarter of an inch bore were drawn to a fine neck about a quarter of an inch from the end, the remaining quarter of an inch was made into a cylindical bowl with a solid rim and a flat base, the centre of the base having a fine hole leading to the tube below. Fig. 2.

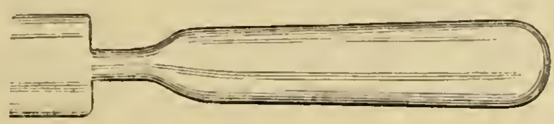


Fig. 2.

The inside walls of the bowl were ground with a stone so that they became rough, similar to the walls of a recently prepared cavity in a tooth. Bowls were plugged with cotton and sterilized in dry air at 160 C. for one hour, then filled almost to the constriction with bouillon. Cotton plugs replaced and tubes sterilized in live steam for twenty minutes on three consecutive days.

FILLING BOWLS WITH AMALGAM.

Alloy, mercury, mortar and pestle, and all instruments used in inserting fillings were sterilized in dry air at 160 C. for one hour; sterilizer was then allowed to cool to 37 C. Thus the tubes, the instruments, the filling materials and saliva were all of the same temperature, 37 C. The filling materials were mixed and placed in the bowls of the tubes in the sterilizer at body temperature and maintained at that temperature until tested for infection. In this way there could be no possible chance of error by an unequal expansion or contraction of the glass or the filling materials between changes of temperature. Within ten minutes of the bowl being filled with the amalgam the tubes were immersed in the beaker of saliva. The beaker was then placed in the incubator, which was maintained at a uniform temperature, 37 C. In all thirteen tubes were filled, ten put in the saliva and three control tubes put through all processes except being placed in the saliva. Some of the amalgam mixed was imbedded in agar and put in incubator. In no case were the material, instrument points, or contents of tubes touched with the hands. So far as possible every source of infection was guarded against.

13 tubes filled, 10 put in saliva.

SERIES F.

In 7 days 2 tubes tested, 1 control, and 1 from saliva, neither infected.

In 16 days 1 tested, not infected.

In 39 days 1 tested, not infected.

In 47 days 1 tested, not infected.

In 52 days 1 tested, bouillon cloudy, but no growth on agar.

In 61 days 1 tested, not infected.

In 66 days 1 tested, infected.

In 73 days 1 tested, infected.

The manner of testing or deciding whether an infection had occurred or not was the same as that previously described under control fillings.

SERIES G.

CEMENT TESTS.

A test of Fellowship cement under the conditions aforementioned was made with the following result:

13 tubes filled.

10 tubes put in saliva, in 7 days 10 tested, 4 infected.

3 control tubes not put in saliva, 7 days, were not infected.

SERIES H.

ASH CEMENT.

5 tubes filled.

4 put in saliva, in 8 days 4 tested, all infected.

Control not infected.

SERIES I.

JUSTI CEMENT.

5 tubes filled.

4 put in saliva, in 8 days 4 tested, 1 infected.

Control not infected.

ROOT FILLINGS.

The same heavy tubes were used in these experiments, only having the necks drawn out much longer, Fig. 3, so as to make

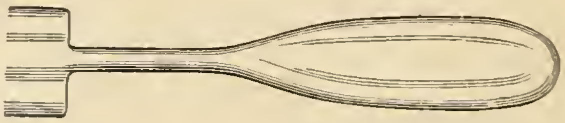


FIG. 3.

a fine root canal. All were filled under same conditions of care, etc., as preceding, canals lubricated with chloro-percha and gutta-percha cones forced home, using little heat and good pressure. There is a serious objection to heating gutta-percha very much when filling a canal. It greatly contracts on cooling. About a half-hour after the canals were filled the bowl was filled with cement. As soon as the cement was set the tubes were placed in the saliva.

SERIES J.

11 filled.
11 tubes put in saliva.
In 8 days 1 tube tested, not infected.
In 13 days 1 tube tested, not certain, but likely infected.
In 20 days 1 tube tested, and infected.
In 28 days 1 tube tested, and infected.
In 32 days 1 tube tested, and infected.

In another series canals were filled as above, and over them was placed a thin layer of oxychloride and over all the same cement, as in the previous series.

SERIES K.

7 tubes filled.
In 6 days 1 tested, not infected.
In 13 days 1 tested, not infected.
In 20 days 1 tested, not infected.
In 28 days 1 tested, not infected.
In 33 days 1 tested, not infected.

In another series the canals were as well filled with gutta-percha as possible, slightly warming them and using no lubricant nor filling the cavity with cement.

SERIES L.

5 tubes were put in saliva.
In 24 hours 5 were tested and 2 were infected.

The above experiments are only a corroboration of work done by the author some years ago and published in the April number of the DOMINION DENTAL JOURNAL, 1900. The experiments at that time were made in a purely mechanical way, but they pointed directly to what was suspected at that time and to what has been shown by more recent investigation. The ordinary root canal filling is not a barrier to either moisture or bacteria. The author when making the experiments did not dream of the infection of a root canal from the oral cavity, but was directing attention to the possibility of closing the apical end of the root canal only. To quote from the paper in question: "If a root canal ought to be filled there must be some reason for it. The best and only reason for filling a root canal is to keep something out of it that is undesirable. That undesirable something is most likely moisture or granulation tissue, or both, with a probable pyogenetic infection. It is fair to assume that a filling material that will prevent the passage of moisture will prevent the passage of bacteria and granulation tissue. This being granted, the relative merits of absorbent cotton, raw cotton, gutta percha, and the cements as barriers to the passage of moisture and hence the passage of bacteria can be seen from the following experiments. It must be borne in mind that these experiments do not relate in any way to the solubility, destructibility, density or irritating qualities of the material used."

Glass rods about two inches long with three-sixteenths of an inch bore were drawn to a fine point at one end, while the other end remained its original size. In this way a cone was made about three-quarters of an inch long and resembling the root canal of a tooth. In all cases these cones were opened clear through. When they were filled with the root canal filling material their small ends were immersed in a red-colored solution. This was accomplished by passing the tubes through holes cut in a piece of cardboard and the cardboard placed over a shallow pan containing the red solution. The tubes were held in an upright position, while only their small ends were below the surface of the solution.

Below is a tabulated form of the experiments arranged in the order in which they acted as barriers to moisture:

SERIES M.

Material	Tubes	Hours time	Colored	Not Colored
Chloro-percha and gutta-percha points	10	48	3	7
Gutta-percha	13	48	6	7
Oxychloride	13	48	11	2
Absorbent cotton (large end of tube sealed)	26	24	24	2
Cotton and chloro-percha	10	48	8	2
Raw cotton	22	48	22	..
Absorbent cotton	7	24	7	..
Oxyphosphate (Ash)	12	72	12	..
Oxyphosphate (Hammond)	13	48	13	..

Thus it would appear that if there were moisture at the end of a root canal, practically none of the above materials would prevent its passage into the tooth cavity.

I approach the summing up and the drawing of conclusions from the work I have done with some misgivings. First, because of the incompleteness of the work done, and, second, because it is quite possible to come to a wrong conclusion, though the premises may be correct. Again, the conclusions arrived at may not be wholly based upon the experiment here reported, because a great deal has been done that if now reported would only weary you. However, it may be safely stated that oxyphosphate cements, gutta-percha, cotton, or any combination of these with each other or with any other undisinfecting materials will not prevent the passage of moisture or bacteria. Oxychloride of zinc will prevent the passage of bacteria for at last 60 days, but not moisture for that length of time. Some amalgams, if properly mixed and inserted, will resist bacteria for two months, and others will not resist bacteria for three hours, no matter how mixed or inserted. There are doubtless many questions arising in every active mind here. Have you tried this or that cement, or So-and-so's gutta-percha, or what amalgams leak or what do not? Do the bacteria pass through the substance of the material, or do they pass between it and the walls of the cavity? After testing ten or twelve cements of different names my conclusion is, that they all leak; those that do not shrink allow the passage to take place through the mass. The only difference is, that those that shrink leak sooner than those that do not. Only a few amalgams have been tested, but it is quite likely that only those leak that contract or flow badly.

Root canal fillings made by heating gutta-percha cones and packing them with an instrument that penetrates the material are not so resistant to either moisture or bacteria as those made by first using chloro-percha, and then carefully forcing the proper sized cone into the canal without puncturing or heating. When gutta-percha is heated, it seems to have tendency to creep, and unless it is held with continuous pressure until it is hard, spaces will appear around it. Notwithstanding its defects, chloro-percha and gutta-percha root fillings are the best resistants of moisture among those materials examined, but its power to resist either moisture or bacteria is not great enough to make it an ideal root filling.

In the light of what is shown in Series E, D, etc., and in table M, consider a tooth in which the pulp has been devitalized and removed, the root canal filled with gutta-percha and the crown filled with cement or an artificial crown cemented on, or the tooth used as an abutment for a bridge which is set in cement. It is almost certain that bacteria will have penetrated from the oral cavity clear through the cement filling and gutta-percha root filling in less than a month, if the resistance of the living tissues do not prevent it, and we know that they very often do not. It is quite possible and in fact probable that there are more alveolar abscesses on treated and filled teeth due to direct infection from the oral cavity than from an infection from the general circulation. It is quite clear from these experiments that if there be moisture or bacteria at either end of a tooth filled with cement or gutta-percha they will be absorbed and kept in abeyance only by resistance of the living tissues; but as soon as this resistance is lowered or the dose very much increased the tissues about the apical foramen are invaded and an alveolar abscess is imminent. Many filled teeth are kept in a lame condition for years because of the continued irritation of an infection about the apex.

Since a root filling made by first moistening the canal with eucalyptol and then pumping chloro-percha into it and into this forcing a gutta-percha cone is the best resistant to moisture, and since oxychloride of zinc is the best resistant to bacteria a combination of these two materials would seem to make the best root filling. The gutta-percha being placed at the apex of the root canal and over this a filling of oxychloride of zinc. This combination root filling has resisted infection from the crown end for over 60 days. Of course there is the probability of absorption of moisture if there be any from the apical end, but no harm will come of it if bacteria are not carried to it by the circulation.

In conclusion, it is my impression that few if any root canal fillings are resistant to either moisture or bacteria, and that most peridental infections are direct from the oral cavity in pulpless teeth, and if oxychloride of zinc were used in the pulp chamber or some part of the root canal many, if not all, such infections would be averted.

(*The discussion on this paper will be given in the August issue.*)

Proceedings of Dental Societies

ELGIN DENTISTS ELECT OFFICERS.

The regular monthly meeting of the Elgin Dental Society was held in the office of Dr. Fitzsimmons recently. A large number were present, it being the occasion of the election of officers for the ensuing year. After the general routine of business was conducted, the election was proceeded with, which resulted as follows:

President—Dr. G. T. Kennedy.

Vice-President—Dr. F. E. Bennett.

Secretary-Treasurer—Dr. C. B. Taylor.

Executive Committee—Dr. H. H. Way, Dr. E. Wilbur Honsinger, Dr. O. W. Kennedy, Dr. Teskey.

Members of Ethics Committee—Drs. Fitzsimmons, Trigger and Teetzel.

Programme Committee—Drs. Lumley, Bennett and Taylor.

The retiring Secretary-Treasurer, Dr. E. Wilbur Honsinger, read the financial report, which showed the society to be in a prosperous condition.

Dr. J. J. Teetzel, of the West India Islands, was present and entertained the members of the profession for an hour and a half with a most interesting and instructive talk on the inhabitants, employment and general characteristics of the people of those islands. The meeting adjourned at 11 o'clock to meet on the second Monday in September in the office of Dr. O. W. Kennedy, of Aylmer.

HARVARD DENTAL ALUMNI ASSOCIATION.

At the 33rd annual meeting of the Harvard Dental Alumni Association, held at Young's Hotel, Boston, Mass., June 27th, 1904, the following officers were duly elected for the ensuing year, viz :—President, Harry S. Parson, '92, Boston: Vice-President, Ned A. Stanley, '84, New Bedford ; Secretary, Waldo E. Boardman, '86, Boston ; Treasurer, Harold De W. Cross, '96, Nashua, N.H. Executive Committee, Waldo E. Boardman, '86, Chairman, *ex-officio*, Boston ; Samuel T. Elliott, '01 (for one year), Boston ; Walter A. Davies, '01 (for two years), Boston.

WALDO E. BOARDMAN, '86, *Secretary*.

THE INTERSTATE DENTAL FRATERNITY.

The Interstate Dental Fraternity will hold its annual meeting at St. Louis on Tuesday, August 30th. The business meeting will be at 3 p.m., to be followed by a banquet. The Committee in charge are Dr. Burton Lee Thorpe, Chairman ; Dr. Edward Everett Haverstick and Dr. Ernest P. Dameron. Members may procure their banquet tickets in advance by remitting to Dr. E. E. Haverstick, 346 N. Boyle Avenue, St. Louis.

R. M. SANGER,
National Secretary.

FEDERATION DENTAIRE INTERNATIONALE.

The next (fourth annual) meeting will be held in the Coliseum Building, St. Louis, Mo., August 26th and 27th.

The first session will convene under the Presidency of Dr. Charles Godon, at 11 a.m. There will be a meeting of the Executive Council, on Thursday (the 25th), at the Hotel Jefferson, at 10 a.m.

The section on Education will meet at 3 p.m., Friday.

The section on Hygiene and Public Dental Service, will meet at 3 p.m., Friday.

The section on International Dental Press, will meet at 4.30 p.m., Friday.

The Officers of the Sections Are.

Education.—President, Dr. T. W. Brophy; Vice-Presidents, Dr. E. C. Kirk, Dr. D. W. B. Paterson, and Dr. O. Zsigmondy; Secretaries, Dr. M. Roy, and Dr. R. B. Weiser.

Hygiene and Public Dental Service.—President, Dr. W. D. Miller; Vice-Presidents, Dr. Cunningham, Dr. Forberg, Dr. Jenkins and Dr. Rose; Secretaries, Dr. R. Heide, Dr. Sauvez, and Dr. R. B. Weiser.

Commission on International Dental Press.—President, Dr. E. Forberg; Vice-President, Dr. A. W. Harlan; Secretary, Dr. E. Papot.

Executive Council.—President, Dr. Charles Godon; Vice-Presidents, Dr. A. W. Harlan, Dr. W. D. Miller; Secretary, Dr. E. Sauvez; Treasurer, Dr. F. Aguilar.

Members.—Dr. George Cunningham, Dr. E. Forberg, Dr. R. B. Weiser, Dr. J. E. Grevers, Dr. F. Heide, Dr. Klingelhofer.

On behalf of the federation,

A. W. Harlan, *Vice-President.*

1122 Broadway, New York City.

FOURTH INTERNATIONAL DENTAL CONGRESS, ST. LOUIS, AUG. 29 TO SEPT. 3, 1904.

The Local Committee and Bureau of Information wish to dispel from the minds of the profession, and all persons that labor under any misconception, that the rates of St. Louis hotels are extortionate.

We have investigated the conditions and rates of the leading hotels of St. Louis, and notwithstanding the fact that this city is entertaining a World's Fair, the hotel rates are no higher than in other cities.

We will append a number of the leading hotels and rates of same, and call your attention that it is not required of you to put up at any of the hotels mentioned, as there are many hotels and boarding-houses in the city where rooms can be secured for from 50 cents to $2 per day. The exact date should be stated in securing rooms.

We append a list of hotels and rates of same as follows:

SOUTHERN HOTEL.

The American plan rate is $5 per day for room, without bath, and $6 a day for a room with bath. The rate is $10 per day if two persons occupy the room.

PLANTERS' HOTEL.

Room, without bath, occupied by one person, $3 to $4 a day. Same for two persons, $6 to $7 a day. Room, with bath, for one person, $4 to $5 a day, and for two persons, $7 to $8 a day.

JEFFERSON HOTEL.

Room, without bath, for one person, $4 a day; when occupied by two persons, $6 a day. Room, with bath, for one person, $5 a day and up; when occupied by two or more persons, $7 a day and up.

ST. NICHOLAS HOTEL.

Room, without bath, for one person, $2.50 to $3.50 a day; for two persons, $4 to $5 a day. Room, with bath, for one person, $3 to $5 a day; for two persons, $5 to $7 a day.

LINDELL HOTEL.

Room, without bath, for one person, $2 a day; for two persons, $3 a day. Room, with bath, for one person, $3 a day; for two persons, $4 a day.

WASHINGTON HOTEL.

Room, without bath, for one, two, or three persons, $5 to $7 a day; room, with bath, for one, two, or three persons, $8 a day.

LACLEDE HOTEL.

Room, without bath, for one person, $1.50 to $2 a day; for two persons, $3 a day; room, with bath, for one person, $3 a day; for two persons, $5 a day.

TERMINAL HOTEL.

Room, without bath, for one person, $2 to $3 a day; for two persons, $4 to $5 a day. Room, with bath, for one person, $5 a day; for two persons, $7 a day.

MOSIER HOTEL.

$1 to $3 per day, European plan, with Silver Moon Restaurant attached, at very reasonable rates. Located at Ninth and Pine Streets.

HOTEL ROZIER.

Opposite Exposition Building, Olive and 13th Streets. Rooms, without bath, $1 to $2 a day.

MAMMOTH HOTEL COMPANY.

South-east corner Olive and 12th Streets. Can accommodate 2,500 guests per day at rates from 50 cents to $1.50 per day.

THE INSIDE INN.

With a capacity for 5,500 people; is within the Exposition Grounds; erected under a contract with the Exposition management, stipulating its rates.

This hotel offers 500 rooms at $1 per day; 500 at $1.50 a day; 500 at $2 a day, and the remainder, which are larger, with baths, at higher rates. The Napoleon Bonaparte, the Forest City, the Fraternal, the University, the Kenilworth, the American, the Epworth, the Grand View, the States, the Oakland, the Iowa, the Guaranty, the West Park, the Christian Endeavor, the Visitors, and others, with a capacity for from 500 to 5,000 guests are within easy walking distance of the World's Fair gates. In fact, we have hotels, boarding-houses, apartment-houses, and rooming-houses, all over the city, of respectable character, and on the street car lines.

An impression prevails that there may be lack of accommodation at reasonable prices. Not only will there be sufficient room for all who come, but the rates will be reasonable. We appeal to the profession of the country to give information respecting the accommodations in a spirit of fairness and justice to St. Louis, based upon the above facts.

St. Louis is prepared to care and welcome all comers, and to show them the grandest universal exposition of the world's resources and products in the history of man.

The Fourth International Dental is now an assured success. Many foreign nations have signified their intention to take part in this congress. The islands of the Pacific Ocean will be well represented. Their assembling in the centre of the great Republic should stimulate every American dentist to action, and each individual of this great profession should feel under obligations to help to push the congress to a successful issue. We have our professional record to maintain and act the part of host. As a consequence we should endeavor to sustain the reputation of American hospitality.

Here is the birthplace of the dental college, the most of the inventors, the mechanical geniuses, and the men who have brought about the wonderful advances in our great profession.

We trust the profession of America will take hold with their accustomed vigor, let nothing be undone that will be for the good of the profession, and carry it out with a most liberal spirit to a surprising conclusion.

A list of hotels, boarding-houses, rooming-houses, and private homes, with their rates appended, will be furnished by the committee to all asking for same. Any other information will be freely given by corresponding with any of the following committee:

D. O. M. LeCron, Chairman, Missouri Trust Building; Max Fendler, Secretary, Missouri Trust Building; H. F. D'Oench, George H. Gibson, S. H. Voyles, Orme H. Manhard, Joseph G. Pfasff, G. S. Kitchen.

LECTURESHIP VACANT.

Applications for the position of Lecturer on Physiology in the School of Dentistry of the Royal College of Dental Surgeons of Ontario, addressed to the "Chairman of Committee on Lecturers," 93 College Street, Toronto, will be received up to August 1st, 1904. Minimum duty each session, 50 lectures.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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ANNUAL ANNOUNCEMENT OF THE ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

This very important publication has appeared again. This year it is more complete than ever before; it contains a fairly complete record of the doings of the Board of Directors for the past year. It is strange that so few members of the profession of Ontario read the Announcement and proceedings of the Board. Almost daily is the secretary asked by licentiates for information that is contained in the Announcement. Many licentiates do not realize how important the doings of the Board are to the profession. At one meeting or in one hour they could undo what it has taken decades for the profession to accomplish. Again, many do not recognize that they are members of a corporation and that the board are their legal representatives, conducting a business of over $25,000 a year, and that the Announcement contains the annual statement. Both the management of the profession and the finances are of importance. If either be improperly managed the profession would immediately suffer; rights and privileges now enjoyed could easily be given away, the finances mismanaged, and direct taxation of the profession to maintain the school the result. While at the present time there is no such danger immediately ahead, as the the present Board is alive to every interest, the profession should be fully cognizant of every act so that if ever a time should come when action is necessary it can be taken intelligently. The Board has placed a financial statement of the position of the college finances on the last page of the proceedings. Though it is not a balance sheet it contains much information not heretofore published. Few of the profession know that the college plant cost $85,000. We presume that there is a complete inventory of equipment and valuation in the Board's possession which would be useful in adjusting loss in case of complete or partial loss by fire. We feel confident that the Board sends out the present Announcement with a good deal of satisfaction and a desire that it be carefully read by the members of the college.

CANADIAN DENTAL ASSOCIATION.

Arrangements are about completed for our national meeting. The committees have just about completed their work. A preliminary notice was sent out to every dentist in Canada last month. The official programme will be issued about the middle of August. Canadian dentistry is sufficiently alive to make this a great meeting in point of numbers and importance. The discussion of a national standard will be of unusual interest, particularly to the young men. Dentistry is made up chiefly of young men and they must come forward and take the initiative. Let no young man think that the future of dentistry in Canada is in the hands of the older members

Editorial Notes

DR. EDWARD C. CAMPBELL, Shelburne, was married to Miss O'Flynn, June 22nd, 1904.

DR. JAMES H. KELSEY, R.C.D.S., 1900, has been elected Secretary of the Erie Dental Society.

EDWIN LENTHALL OLDFIELD, D.D.S., Trinity, received the degree of M.D. from Jenner Medical College, Chicago, June 29th, 1904.

DR. K. C. CAMPBELL who has been on the Staff of the Chicago College of Dental Surgery for the past year has begun practice in Winnipeg, Man.

THE chairman of the Committee *re* Army Dental Corps desires a meeting of the Committee before he reads his report to the Canadian Dental Association general meeting.

Obituaries

DR. FRED BRITTON.

Dr. Fred Britton was born at Brantford on November 28th, 1873, and educated in Public Schools and Collegiate Institute of Brantford. After leaving school he spent several years as clerk in the head office of the Western Assurance Company, Toronto. He gave up his position to commence the study of dentistry. He graduated in 1902, and immediately started practice in partnership with his brother, Dr. Frank Britton, in his native city. He was specially fond of music, and spent all his spare time for several years in cultivation of his voice. Dr. Britton was leader

Dr. Fred Britton.

of the choir of Hope Methodist Church of East Toronto, and afterwards soloist in Brant Avenue Methodist Church, Brantford. He died of appendicitis, on April 4th, at the home of his brother, Dr. William Britton, Toronto.

Resolution of regret adopted by the Brant County Dental Society of Ontario:

Whereas, the Almighty has taken from our midst our friend and fellow-practitioner, Dr. Fred Britton, and

Whereas, with his death the profession at large will lose one of its most earnest and proficient advocates, and the Brantford Dental Society, in particular, one of its most respected members, whose face and words were always gladly welcome. Therefore, be it

Resolved,—That we, the Brant County Dental Society, while of necessity yielding to the inevitable, deeply deplore his death, and earnestly unite with the bereaved family in mourning their untimely loss, and shall ever bear in kindest recollection the memory of our past association with him.

Resolved,—That a copy of these resolutions be sent to the bereaved family; that a record be made in the transactions of the Society, and copies be sent to the dental journals.

Signed on behalf of Brant County Dental Society,

DR. P. P. BALLACHEY, *Vice-President.*
A. ALMON BABCOCK, *Secretary-Treasurer.*

J. A. MARSHALL, D.D.S., BELLEVILLE, ONT.

The late Dr. Marshall was born at Brampton, Ont., in 1846, being thus in his 58th year. He lived in the western portion of the province until 1886, when he came to Belleville, and commenced practising dentistry here. Since then this city has been his home. In his profession he was considered highly proficient, and held various offices in the Ontario Dental Association, being its president one year. For eight years he was a director of the Royal College of Dentistry. The doctor took a keen interest in municipal matters. During the years 1894, 1895 and 1897 he was a member of the City Council, being one of the representatives from Samson Ward. Whilst acting in that capacity he did all in his power for the city's welfare. In fraternal societies he was connected with the Royal Arcanum, A. O. U. W., Chosen Friends and I. O. F. In religion he was a Methodist, being a member of Bridge Street Church. Whilst not an active party man, he was in politics a staunch Conservative. The deceased was twice married, his surviving helpmate being a daughter of the late Rev. W. Windell, of Lotus, Ont. The children surviving are three sons and four daughters. The sons are O. A. and John W., of Belleville; Herbert E., of Detroit. The daughters are Lena, Ella, Eva and Kathleen, all at home. To the widow and children will be extended the heartfelt sympathy of a large circle of friends.

J. A. Marshall, D.D.S.

The funeral of the late Dr. J. A. Marshall took place from the family residence, South Charles Street, to the cemetery. The funeral was largely attended and the floral tributes were both numerous and handsome. Rev. Mr. Drumm officiated at the service at the house and grave. The bearers were Lieut.-Col. Lazier, Messrs. A. McGinnis, R. Mathison, H. Corby, E. F. Milburn, J. Frith Jeffers.

Dominion Dental Journal

VOL. XVI. TORONTO, AUGUST, 1904. NO. 8.

Original Communications

ANESTHETICS, OR ANESTHESIA IN DENTAL OPERATIONS.

BY G. W. MYLKS, M.D.,
Professor of Anatomy, Queen's University.

Read before Eastern Ontario Dental Association.

Permit me, first of all, to thank you for this opportunity of meeting the members of the Dental Association. Before I proceed, however, let me ask your forbearance; for you may find my remarks as soporific in their effect as the subject-matter I have to deal with, viz., anesthetics. Properly speaking, this paper will deal with anesthesia in dental operations.

The subject of anesthesia has long been reckoned with by the general surgeon, and is, I believe, of increasing interest to both the dental surgeon and physician. Perhaps in the past not enough stress has been laid upon the choice and proper administration of anesthetics. We are glad, however, to note that special attention is now being paid to these points, and real progress being made. Elaborate research work has also been recently carried out along the lines of resuscitation, which may be productive of much good in further minimizing the danger of going under an anesthetic.

In reviewing the field of anesthetics, we find several departures from the old order of things, some of which, though still in the experimental stage, may yet come into favor.

The administration of the gas and ether combination has long since proved to be a great boon both to the operator and the patient. Recently, for ordinary purposes, Hewitt has advised the adoption of the gas-ether-chloroform sequence. By this system anesthesia is induced by gas and ether and maintained by chloroform.

Ethyl chloride, while still very valuable for local purposes, has been successfully used as a general anesthetic. The spray from an ordinary tube is allowed to play upon a suitable mask and so be inhaled. It is said to be safe; the advantages over gas being: (1) There is no cyanosis; (2) there is little danger of over-dosing; (3) it is less expensive; (4) it is portable and handy.

In the *Lancet* of July 20th, 1901, McCardie recommends ethyl chloride in the shorter operations instead of nitrous oxide, especially in the case of less vigorous patients.

There is also a mixture described in the *Lancet* dated June 20th, 1902, composed of 60 parts ethyl chloride, 35 parts methyl chloride, and 5 parts ethyl bromide. It has been introduced under the name of somnoform, and is said to be perfectly safe, easy of administration, and its effect sufficient in operations not exceeding an hour's duration.

In the group of local anesthetics, eucaine is by all odds the safest and best adapted for dental work. Several combinations of eucaine and cocaine have been suggested, but none have supplanted in efficacy and safety the use of eucaine itself.

It goes without saying that in operations of small extent, local anesthetics are much to be preferred. Hence my remarks will be chiefly confined to the consideration of general anesthetics under the headings, Choice and Administration.

Naturally, in the choice of anesthetics, the two main considerations are: (1) The comparative danger of the drugs to be used; (2) the condition of the patient.

In dealing with the first point it has been said that the mortality rates from two great general anesthetics have been respectively, chloroform, 1 in 3,000; ether, 1 in 10,000. Looking at these figures we must at once conclude that ether is much the safer of the two anesthetics.

Let us examine further. In one group of 2,400 cases to whom ether had been given ten developed fever with some respiratory trouble, and one case proved fatal. Taking the mortality rate from chloroform to be 1 in 3,000 we must now consider the relative danger of these two anesthetics in a somewhat different light. One out of 10,000 cases from ether administration die on the table, but one out of 2,500 die from after effects, respiratory troubles, etc. The scene of the tragedy is only removed from the operating table to the bed. In dental surgery, on account of the site of the operation, the bleeding, which is usually present, and the fact that children usually form an important percentage of the operative cases, ether is, in a large majority of cases entirely unsuitable and unsafe. We may conclude, then, that in the great bulk of dental cases that chloroform is the anesthetic elect. But we must remember that there is a group of cases that happily form a small minority to which chloroform must never be given. I refer to patients suffering from pronounced anemia or cardiac weakness. To these ether must be administered, preferably in the form of gas in the early and ether in the later stage.

The next factor in the choice of anesthetics is the condition of the patient. This can be determined only after a careful examination by the physician. What does this careful examination mean? We must all admit that especially in dental operations the convenience of operator and anesthetist are too often considered before the patient. Let us suppose a case. The patient may have arrived without previous appointment from the country. An examination of the mouth reveals that several teeth must be extracted, and, therefore, a general anesthetic is required. The physician is called to administer it, and in nine cases out of ten a bottle of chloroform and a mask constitute the equipment he carries to the office. The patient is asked to sit in a chair; perhaps a superficial examination of the heart is made—the chair is tilted back to an angle of 65 degrees, and without further ado the chloroform administered. If by good luck the patient survive the experiment (for such it is) then to good luck let us give the credit. Such a procedure may be convenient, but never safe.

It is the plain duty of the dentist and anesthetist to defer operation until a careful and thorough examination of the heart, lungs and urine has been made, for largely upon such examination must rest the proper choice of anesthetic. This may seem a useless waste of time, but let me emphasize that it is not enough to have our patients survive an anesthetic, but it is now imperative that they survive with the least possible danger of after-effect. To no less degree, however, does the safety of the patient depend upon the cautious administration of the anesthetic than upon its correct choice. It is said that the greatest number of deaths from chloroform have occurred during the reduction of dislocated joints. The reasons for this are twofold: (1) The profound shock, in which condition the patient is found; (2) lack of preparation. Let us, therefore, emphasize the necessity of thorough preparation of the patient. The stomach should be empty and the bowels should have been previously cleared by a cathartic.

The patient should be as far as possible protected from disturbing influences, such as the display of instruments, the cries of other patients, and every assurance should be given as to the outcome of the operation. If the patient is very nervous a hypodermic should be given of strychnine, or strychnine and morphia combined. The chair in which the dentist operates should be made as nearly level as possible; in fact, should have an adjustment by means of which the patient may be inverted in case of emergency. Special caution should also be taken against blood or vomitus being inhaled. The part should be frequently sponged, and any clots wiped out. In case of vomiting the patient should be turned so as to provide for the escape of the vomited matter. The anesthetist should have at hand every means of resuscitation, such as stimulants, hypodermics, oxygen, etc.

Beyond these cautions being taken the success of the administration depends largely upon the skill and experience of the anesthetist. Let us now enumerate these points:

1. The physician should have ample time for the thorough examination of the patient.

2. That the anesthetic should not be proceeded with until the patient has been thoroughly prepared.

3. That in the choice and administration of an anesthetic the physician should have complete control, for upon him rests the responsibility in case of accident.

4. That the dentist, so far as possible, should endeavor to assist the anesthetist in means whereby the safety of the patient may be further secured.

5. That in the choice and administration of the anesthetic, convenience of operator or anesthetist should always be a secondary consideration to the condition of the patient.

6. That the equipment for administration or resuscitation in case of accident be complete.

If these main considerations are observed the dentist is assured of better results in the various operations upon the mouth, and the physician anesthetist earns the gratitude of a patient who has passed through a distressing operation without untoward immediate or after-effects.

NECROSIS OF THE JAWS.

By W. G. Anglin, M.D., Kingston.

Read before Eastern Ontario Dental Association.

The jaws, both upper and lower, as well as the other bones in the body, are subject to necrosis. Necrosis, or death of bone, corresponds to mortification of the soft parts, a large portion of the bony tissue being affected *en masse,* in contradistinction to the molecular destruction of bone, which is termed caries.

Etiology of Necrosis.—Mechanical injury; blows; fractures; alveolar abscess; the poisonous effects of syphilis and tubercular disease; excessive use of hydrargyrum; exposure to the fumes of phosphorus; and it also occurs as a sequel to the acute exanthematous fevers, especially scarlet fever and small-pox, and also after typhoid fever.

Periostitis, or inflammation of the vascular, connective-tissue covering the bone, is frequently caused by mechanical injury, although it is often secondary to alveolar abscess, and the irritation set up by the presence of carious teeth; an acute periostitis runs rapidly on to suppuration, and generally the attention of the physician or dentist is not called until this process is well established. In periostitis, there is always severe pain of a throbbing, tensive character, always aggravated at night; swelling of the cheek over the affected area, and the least pressure on the teeth causes sharp pain; general febrile symptoms. The treatment should be prompt and active—free incisions down to the bone, so as to give exit to the pus, followed by hot fomentations of the mouth with detergent and antiseptic solutions (*e.g.,* sol. boracic acid, listerine, glyco-thymol), and decayed teeth should be extracted, while saline cathartics should be given so as to produce a decided effect.

Necrosis of the lower jaw is more frequently met with than in the upper jaw, a fact most likely due to the greater vascularity of the latter. It is generally the effect of unchecked suppurative periostitis, the pus separating the membrane from the bone, and in this way cutting off the vascular supply, death of the bone occurring rapidly. Necrosis may be complete, involving the whole thickness of the bone; or partial, limited to the alveolar process. The symptoms of impending narcosis are those of periostitis: severe pain; increased heat; rapid swelling—and here much may be done by prompt action, incisions, extraction of teeth and hot fomentations.

After narcosis has been established, the pus finds its way out by the side of loosened teeth, or wells up between the bone and the gum; or it may burrow deep into the neck and point near the angle of the jaw. The pus has the characteristic fetor of that from dead bone. A fistulous external orifice becomes established, and on using a silver probe it comes in contact with the necrosed portion of bone—sequestrum.

Treatment.—Removal of the sequestrum, but only after separation. This is especially important in the case of children before the permanent teeth have made their appearance, as a premature operation may not only seriously damage healthy bone, but also prevent the eruption of teeth that might otherwise have been saved. Sometimes there are no external openings, but fragments of bone project into the mouth, and are easily removed by fingers or forceps after making a small incision through the mucous membrane. If at all practicable the extraction of dead bone should always be by the mouth. Necrosis from the abuse of mercury (syphilis) is now rarely seen, and the same may be said of phosphorous.

In cases of fracture of the jaw, it is a good rule not to extract loosened teeth, as in addition to the fact that they most frequently become firm again, the extraction is attended with danger of removing fragments of bone that might have been preserved. A good rule is to leave every fragment that is not absolutely detached. Occasionally fragments become necrosed, and have to be removed, but if there is any vascular connection the vitality of bone is exceptionally great. Repair is generally complete in thirty to forty days.

Alveolar Abscess (effect of inflammation at root of a tooth) has been mentioned as a cause of necrosis, superficial or deep. The superficial form is popularly known as a gum boil—puffy swelling of gum, tender and painful; incision gives speedy relief—if it does not rupture spontaneously.

Deep alveolar abscess commences in the substance of the bone, the alveolar process becomes carious and undergoes absorption. The pus may burrow and point in the roof of the mouth (upper jaw). Early treatment is very necessary—incision and removal of tooth, as delay may lead to extensive necrosis, or to the formation of a long sinus most difficult to heal.

Mr. President and Gentlemen, I thank you for the honor of being present at your meeting to-day, for I hold your profession as worthy of the highest respect and honor. While in the past decade or two the science of medicine and surgery has been advancing with rapid strides, you also have been keeping pace, and the comfort and welfare of the community is greatly enhanced by your skill. If "good digestion would make an appetite," it must be largely through the efforts of your profession. Someone has said, in answer to the question, "Is life worth living?" "That depends on the liver," and we may supplement that answer by saying that the condition of the liver depends largely on the proper mastication of the food, and necessarily, the presence of sound and wholesome teeth.

INTERPROXIMAL CONTACT.

By Oliver Martin, Ottawa.

Read before Eastern Ontario Dental Association.

At the present time much is being said on the necessity of preserving and maintaining the interproximal space, and I am certain we are all unanimous as regards its importance in promoting the health and usefulness of the teeth, and in preventing the absorption of the alveolar septum, and consequent destruction of the peridental membrane. How, then, is this desirable condition obtained? By contour and contact. Is it always successful? Not always; and just here the question arises, Why? It is the writer's desire to try and show what he considers the cause of failure.

The operator has an ideal contour, which he strives to attain. This ideal may be correct, but, unfortunately, it cannot be universal; that is, a contour which represents faithfully the natural tooth will not always prove satisfactory in restoring and maintaining natural function, but in many cases will permit of food passing the point of contact, and packing down into the interproximal space, and thus producing great discomfort and often not a little pain. This result, you will not find directly caused by the ideal contour, but owing to the condition of adjacent teeth, which may be somewhat loose and spread under the force of attrition.

In some cases a tooth normally firm, but lacking support, will permit of the same trouble. Again, there are those cases of irregular and abnormal occlusion which are so deplorably numerous, and in the majority of these your ideal contour will not prove successful. The failure, then, is at the point of contact, and is owing to the ideal contour not meeting the exact requirements of the special case.

It is alarming how numerous are these special cases. One can hardly fix a rule or system to meet them all. The best I find is this: Get the maximum area of contact consistent with a healthy cervix.

Sometimes abnormal and irregular forms of contour are necessary. Often too much stress is laid on the esthetic and not sufficient attention paid to the restoration of function and comfort of the patient. What are fillings for, gentlemen? Perhaps some of you have experienced what has been termed a "meat hole," if so you will appreciate this poor effort as being at least in the right direction.

In conclusion, I know the remedy has been very imperfectly brought before you in this paper, and in any case, diagrams would be necessary to illustrate different points in contouring. On the other hand, in addressing professional brethren, a hint or two is sufficient, and, no doubt, some of you have given this more thought than I have. Anticipating a question, I might add that bicuspids and molars give the most trouble. Space must be obtained for contouring. Separating slowly with gutta-percha is most satisfactory. The maximum area of contact, consistent with a healthy cervix, gives excellent results.

PERSONALITY AND IDEALS.

By G. M. Hermiston, B.A., D.D.S., Picton.

Read before Eastern Ontario Dental Association.

Every dental programme consists largely of papers on practical dentistry; every department and every subject has been dealt with time and again. I have chosen to offer a few remarks which will aid us as practitioners, to meet our patients and deal with them in such a manner as to at once command their esteem, their respect and their confidence. This done, success is assured us. "Know thyself" is, and always should be, imperative, and the next best thing is to know the public with whom you are connected professionally.

One of our professors used to tell us that one element which would contribute largely to our success as practitioners would be the ability to know at a glance the patients as you meet them in your waiting-room. They may not all be approached in the same way. The individual who can successfully and gracefully adapt himself to any and all circumstances and conditions of life must succeed.

Develop a personality that at all times is seen in your countenance. I do not suggest egotism, but be your best and truest self at all times, and the confidence of your patients has been won. You dare not do otherwise. Justice demands it, and while you may not have the same feeling of regard for them all, you must be honorable towards them all. We all admire that character that bears the impress of sincerity and kindly sympathy. These should be our most potent factors in winning for ourselves a large practice.

We should have enough of personality to be able to advise our patients, and if genuine it will generally be accepted as such. Don't do just as your patients ask you to do, unless you feel assured you are doing right. You may lose that patient and someone else serve them as they have requested, but if your advice has been honest and correct it will, in the end, reflect on him who has gratified the patient's wish against his own good judgment. It would, indeed, be a weakness on our part to always surrender our convictions to our patient; such characters will never be successful. Let that personality be always of the most cheerful. There is no profession where one has more provocation to become irritable than in dentistry. Rest assured that you can quarrel with every patient if you try; in fact, you will, unless you try not to do so. They have so many opportunities to return to your office and say things about your work that will, if answered in the same spirit, develop a quarrel. Be cheerful, and meet them with that tact that a strong personality has made one of your most prominent characteristics. As a rule, your patients approach your office with a grossly exaggerated timidity. This you must dispel, and at once, by your kindly sympathetic and trustful manner.

Every patient who seeks your service, pays you the highest professional compliment that lies in their power, and this demands at least your best treatment, your best skill and your most honorable and manly dealing.

Avoid all conventionality as far as possible, and be guided by your own originality when it commends itself, rather than attempt to merely imitate someone else. He who alone imitates can never develop a strong personality: he sees no need for it. Others think he has only to copy, and in dentistry this is not always feasible, because no two cases are alike. The man whose best judgment and convictions are his bright morning star at all times is the man to whom must come success.

The idealist must be ambitious. He who is contented with his environment, his office and himself, is in a most depraved and dangerous condition. Ideals may not be realities; they must ever be away and beyond us, for so soon as we have succeeded in attaining to our ideals we must advance our standard or fall into a state of self-satisfiedness; should we be unfortunate enough not to elevate our ideal we cannot hope to make use of our best efforts. Our talents must not be hidden; they can only develop in the broad light of competition and progress.

Practically, let our ideals be for and toward that most nearly perfect in all departments. Put aside all petty jealousy, and emulate the worthy on all occasions. Be courteous and charitable toward your fellow practitioners. Uphold his good name in his absence, as you would in his presence. Be particularly guarded in finding fault with a brother practitioner's work; doubtless he has just as many opportunities to find fault with yours. Be above unmanly competition; it will only reflect on yourself, and, above all, avoid any utterances that might lead a patient to lose faith in us as professional men. Any reflections that you may cast upon another leave their shadow upon the profession and yourself.

Let your ideals point you not only to the best professional life, but to the most honorable and respected citizenship. Your patients are entitled to your best efforts, and your profession demands that you shall always be most exemplary. Strive to live so that your profession will respect you and speak kindly of you.

Be diligent and persevering and remember that—

> " The heights, by great men reached and kept,
> Were not attained by sudden flight ;
> But they, while their companions slept,
> Were toiling upwards in the night."

ALVEOLAR PYORRHEA: ITS CAUSE, SEQUELÆ AND CURE.

By D. D. Smith, D.D.S., M.D., Philadelphia.

Read before The New York State Dental Society, at Albany, N.Y., May 13th, 1904.

Gentlemen,—I have debated quite seriously in my own mind how best to meet present obligations and at the same time adjust this subject of pyorrhea to the needs of a constantly widening circle of earnest seekers for light and truth. My first inclinations were towards a familiar " talk " on the " Cause, Sequelæ and Cure of Pyorrhea," but a somewhat critical examination of the present literature of the subject seemed to demand that a more comprehensive review should be made of some of the unsatisfactory, misleading, and positively harmful teachings which burden our text-books and magazines, and which, for lack of something better, have been quite generally received and adopted by the profession.

Alveolar pyorrhea is a disease so burdened with names and vapid descriptions the wonder is that it still persists. We are indebted to the researches of Dr. Pierce for the following: " Suppuration Conjointe," " Pyorrhea Inter-alveolo-dentaire," " Gingivitis Expulsiva," " Osteo-periostiti-alveolo-dentaire," " Pyorrhea Alveolo," " Cemento Periostitis," " Infectioso-alveolitis," " Calcic Inflammation," " Phagedenic Pericementitis," " Riggs' Disease," " Hematogenic Calcic Pericementitis," " Blenorrhea Alveolaris," " Gouty Pericementitis."

Pyorrhea Alveolaris in " American Text-book of Operative Dentistry."—We may, without appreciable loss, practically disregard the articles under the above titles, and many others, until we come down to about 1892 to 1895, when Professor Pierce ran through the *Cosmos* a series of papers on pyorrhea, in which he aimed to make what he called the " gouty diathesis " almost wholly responsible for expressions of this disorder. These articles, revised or re-written, as they appear to have been, for the "American Text-book of Operative Dentistry," have unfortunately done much of the thinking on this important subject for dentistry, and thus it has come to pass that Dr. Pierce's theories are widely accepted in the profession. As a consequence, it is by no means uncommon for the dentist to tell his patient that he is suffering from "gouty teeth," or "gout in the teeth;" nor for the laity to take it up and say, "My dentist says I have got gout in my teeth." Is it not time to enter an emphatic protest, even to the adoption of severe criticism, if necessary, against such inadequate and erroneous conceptions of this most serious mouth disorder?

Dr. Pierce defines pyorrhea as "A molecular necrosis of the retentive structures of the teeth—their ligament and pericementum—an atrophy of the alveolar walls, together with a chronic hyperemia of the gum tissue which leads to limited hypertrophy. After a variable period the teeth drop out and the morbid action ceases with their loss. An examination of the roots of the teeth before and after their exfoliation usually exhibits deposits of calculi upon their surfaces. The disease is usually, though not always, attended with flow of pus from the alveoli."

What Pyorrhea is Not.—Alveolar pyorrhea is not a disease transmitted through germ infection in foods, drinks, the atmosphere or by any other agency; neither is it in the remotest degree a result of some systemic disorder or constitutional vice, as rheumatism or gout. It is not necessarily "molecular necrosis of the retentive structures of the teeth;" indeed, this condition as applied to the alveoli is quite unusual. The alveolar border forms the real support for the teeth, and necrosis of it does not appear until the inflammation has engaged the gum tissue and the pericementum at some portion of the cervix with considerable violence. It may be fairly questioned whether, in many cases of pyorrhea, the pathological state in the alveolar border is true necrosis. It is more frequently a condition of interrupted nutrition, due to the presence of irritating inflammatory products and other accumulated toxins on and about the teeth.

What Removal of Exciting Cause will do.—Certain it is, with the removal of the exciting cause, and properly guarding against return, the nutritive function in the alveolar border is re-established, and the retentive structures of the teeth resume their normal physiological activities. In many well attested cases new alveolar structure has been thrown out around the roots of teeth, tightening them in their sockets, and the whole recovered with normal striated gum tissue having perfect festoons.

The Ligament of a Tooth.—The ligament of a tooth should be considered as purely hypothetical. No structure analagous to a "ligament" exists in connection with a tooth when in a normal condition. Frequently when there is a gradual loosening of a molar tooth through progressive pyorrhea, there will be an exhibit of thickening of the gum tissue with increasing adhesion to one side or portion of the root of the tooth. This is but an abortive effort of nature to strengthen and retain the tooth in position. This thickening of the gum tissue—a wholly abnormal process—furnishes the only approach to a structure about the teeth which approximates a "ligament." I have never observed this tissue to be the subject of necrosis.

One Result of Pyorrhea.—That the teeth "after a variable period" of pyorrheatic attack "drop out," and that "the morbid action ceases with their loss," is quite true.

Pyorrhea and Pus Formation.—Alveolar pyorrhea is not "usually" but *always* attended with formation of pus. The very meaning of the term indicates "pus discharge," and that from about the affected teeth.

Another Quotation from "American Text-book."—"Clinically the cases in which these phenomena are observed may be divided into two classes: First, those in which the disease process appears to begin at the gum margin. The second class, those in connection with which there is much controversy, begin at some portion of the alveolus between the unbroken and apparently healthy gum margin and the apex of the root, the pulp of the tooth being alive."

Pulp of Tooth Alive in Beginning Pyorrhea.—The pulp of the tooth in the beginning of the pyorrheatic infection, we believe, is alive probably in every instance, for pyorrhea seldom or never originates in the tissues about a devitalized tooth or root. There may be, and often is, pus discharge due to *necrosis of the root,* but this is a condition essentially different from alveolar pyorrhea.

Examples of Simulated Pyorrhea.—I have observed in a few instances decay upon the proximate surfaces of lower molars occurring below old fillings, and extending to or below the gum margins, where the infection from the carious root induced simulated pyorrhea, and this between two *devitalized* teeth. In these cases the removal of the irritant—the decay—and filling the cavity, wholly cured the pyorrheatic tendency. Such instances cannot but be regarded as a contradiction of the statement that pyorrhea seldom or never originates in the tissues about a pulpless tooth.

Teachings respecting Constitutional Pyorrhea.—That there may be no confusion in regard to the teachings of this paper, but that they may be clearly understood, I wish to interpolate here that it is my firm conviction, having observed the clinical expressions of pyorrhea since the time it was generally known in this country as Riggs' disease, and having carefully studied it for the past ten years with the determination to ascertain its cause and to divine its meaning in the mouth—I repeat, it is my firm conviction that there is no such expression of pyorrhea as that designated "Class 2nd—Pyorrhea Alveolaris of Constitutional Origin"—found in the "American Text-book of Operative Dentistry," from page 401 to 420. The cut on page 408, "Hematogenic Calcic Pericementitis" (Burchard), is wholly a figment of the imagination; no pathological state resembling it ever presented in clinical experience.

The Impotency of Dental Teachings.—Listen to the confessions of the impotency of dentistry when it stands face to face with a grave difficulty and a diagnosis wholly wrong:

"Inasmuch as these constitutional conditions are complex in their manifestations, and their medical and hygienic management almost exclusively in the hands of the physician, the duty of the dental practitioner is confined largely to the question of diagnosis; the local treatment, however, must be varied in accordance with the peculiarities of the local pathological condition."

It seems difficult to imagine dental teachings making such lamentable confession of inefficiency.

Some Illustrations in "American Text-book of Operative Dentistry."—I believe it is not stated that the cuts illustrating the chapter from which we have quoted in the "American Text-book of Operative Dentistry," were not drawn in representation of any true pathological states; nevertheless, like the one alluded to, they all seem to have been manufactured to suit conditions and descriptions *as written into the article.* Pictures of teeth, alveoli, calculi, and even of instruments, are so strained and inaccurate as to be wholly untrue to clinical observations.

The Constitutional Theory.—A recent magazine article, discussing this imaginative phase of pyorrhea, attacks its opponents with a kind of cyclonic literary *rush,* as though with one stroke of the pen to sweep from the arena all who dare oppose the theory of the constitutional origin of pyorrhea. Permit a single extract:

"The disorder to which I ask your attention is that type of chronic suppurative necrotic inflammation in which the infection of the retentive structures of the tooth is deep-seated, where the suppurative inflammation is of the abscess type rather than the ulcerative, where salivary tartar is not the obvious irritative cause, and where local treatment alone is inadequate to effect a cure or prevent a recurrence of the disorder, and especially where some error in the nutritional process of the individual is a constant factor in the case."

As a literary composition this sentence seems faultless, but it imparts little, if any, get-at-able information respecting pyorrhea.

Another quotation from the same author is equally ambiguous: "It is in connection with this condition, the hyperacid diathesis of Gauterlet, Bouchard, Michaels and others, that we find pyorrhea as a concomitant local disease." I am unable to discern in all this anything that can add to our knowledge of pyorrhea.

To Whom we are Indebted for the Constitutional Aspect of Pyorrhea.—In a "Contribution to the Study of Metabolism" it is said: "We are greatly indebted, in my opinion, to the work and observations of Pierce, Talbott, Rhein and others, who have called our attention with much emphasis to the importance of constitutional conditions of mal-nutrition as predisposing factors in the causation of pyorrhea, for the more closely we investigate the matter, and the more intimately we recognize the data of nutrition in its normal and aberrant expressions, the more clearly we see the direct bearing which nutrition exerts upon the phenomena of disease invasion."

Dr. Rhein on Pyorrhea.—Dr. Rhein's position seems plainly stated in his article on "Studies of Pyorrhea Alveolaris," read before the First District Dental Society of New York, January 18th, 1888:

"It matters not so very much if we are correct or not as to our knowledge of the etiology. To cure the disease is the thing as far as we are concerned in our daily practice; whether the disease is purely local or only a symptom of some hidden trouble, our treatment *depends upon local remedies for its successful issue.*"

Thus it seems evident that Dr. Rhein places the emphasis NOT on the "constitutional factors," but on causes which are of a local origin. "Our treatment," he says, "depends upon local remedies for its successful issue." From the quotations made it would appear that Dr. Rhein has been misrepresented in the above article, and forced to the defence of "constitutional conditions as predisposing factors in the causation of pyorrhea," when he himself favors the belief that local agencies are the cause.

Dr. Talbott on Pyorrhea.—Dr. Talbott not long since, as you will recall, complained in *The Digest*, with apparent justice, that dentists are not readers. Dr. Talbott is one of the trio mentioned as emphatic defenders of the theory of a "constitutional vice in the causation of pyorrhea." So far as I have been able to discover, Dr. Talbott's contribution to alveolar pyorrhea consists in affirming that it is not pyorrhea at all, but that it is "interstitial gingivitis." I have failed to discern in just what way the nosology of this affection calls our attention "with *much emphasis* to the constitutional conditions of mal-nutrition as predisposing factors in the causation of pyorrhea."

The closing paragraph of "Studies in Metabolism" is as follows: "From the view-point which I have endeavored to set before you, it *must be* obvious not only that pyorrhea, within the limitations which I have for present purposes confined that term, is the indication of a state of abnormal nutrition, but that it being a result thereof, we must seek to remove the constitutional vice before we can hope to successfully treat the local disorder."

This method of treatment is certainly unique, and reminds us of a flying-machine promoter who, to get his "flyer" into the air, proposed to suddenly move the earth away from the machine, leaving it flying in mid-air.

"Constitutional Vice" Cured in Preparation for Treating the "Local Disorder."—To the ordinary mind it would seem a somewhat perplexing, if not a really difficult problem, to suddenly eliminate a "constitutional vice" from the system to prepare the mouth for local treatment, especially as we, as dentists, have little or nothing to do with constitutional disorders or constitutional remedies. The article from which the above quotations are made fails to cite a single clinical case, or even to give us a hint as to what this "constitutional vice" may be; neither does it suggest a remedy or a mode of treatment.

The medical profession as yet has never presented the possibility of diagnosing general disease or of determining a constitutional vice through such chimerical methods as analyzing saliva.

Brief Review of other Writers.—Turning to other writers upon this subject, we see such frantic efforts at originality in endeavors to find causes for pyorrhea, that their theories appear like some incoherent mental ataxia, and are so conspicuously absurd as to deserve only ridicule. One, in all seriousness, recently in a paper before a large dental society, ascribed a principal cause of pyorrhea to "infected tooth-picks." We had supposed that wood tooth-picks, or even the more expensive goose-quills, to be so cheap and accessible as to preclude the use of them second hand. If they are really inoculating so many mouths with pyorrhea, it would seem to be a condition demanding the attention of Boards of Health. Whilst these "infected tooth-picks" are given *first* place in the list of causes, the same author has another most original method of introducing his "pyogenic germ" to his destructive work (although he says "We are unable to fix upon any specific germ"): "A deposit of calculus about a tooth proper, forcing away the soft parts, may enable the germ to enter the socket by infiltration." "Infiltration" through "calculus about a tooth *proper*," surely that should be an easy way in which to introduce this nondescript to his work of infection.

Is the Dental Degree "A Badge of Partial Culture?"—It seems incredible that such crude pabulum, some of it evolved from a so-called analytical laboratory, can be palmed off upon the profession as *science*, but such is the case. If we would relieve the dental degree of the stigma stamped upon it by a professor in the University of Pennsylvania, when he called it "the badge of a partial culture," and save it from overwhelming disgrace, we shall speedily relegate such infantile science as "infected tooth-picks," "infiltration of pyogenic germs," uric acid diathesis," "gouty teeth," "constitutional pyorrhea," "gouty pericementitis," and many other absurdities, to an irretrievable oblivion.

The One Manifestation of Pyorrhea.—If we can now descend from the lofty heights of intellectual imaginations from which we have trespassed upon the unknown and unknowable, and can touch the commonalities of earth once more, I would ask your attention to a study of alveolar pyorrhea from the standpoint of its one and only manifestation—a mouth disease of adult life due to local conditions and local causes.

Pyorrhea is a circumscribed inflammation in the tissues of the mouth; an inflammation caused wholly by the presence of natural teeth and the stagnant septic matter adherent to their surfaces.

In a beguiling pamphlet recently sent out to the dental profession by a manufacturing concern, may be found a labored attempt to present alveolar pyorrhea as a constitutional *disease* due to a so-called uric acid diathesis. This pamphlet, although signed by an M.D., is evidently from the pen of one wholly without experience. Having a meteoric surface-glow, the article is well framed to mystify and mislead respecting the true origin, and not less the treatment, of the disorder. Names, facts and inferences are speciously garbled and perverted, unmistakably in the interests of a commercial preparation recommended as a constitutional remedy.

What Teachings respecting Constitutional Causes have done.—We shall do well to remember that in constitutional disturbances pyorrhea is to be reckoned with as a *cause* of disease, but never as a *result*. The etiology of pyorrhea can no longer be dismissed by the theorist with the affirmation that "it is a disease of constitutional origin"; for its manifestation near to or past middle life only; its universal location about the roots of natural teeth; its special association with teeth of dense structure having large bell-shaped crowns practically exempt from decay; the complete immunity of all edentulous mouths, and more than all, the absolute cure without regard to constitutional conditions which attends the removal of the cause or the extraction of the teeth, all point with unerring precision to it as a trouble having positive and distinct local origin. The last analysis of the teachings which ascribe "some constitutional vice" for this condition are not only ambiguous, but they are illogical and absurd, and end in utter mental confusion. Such teachings have not only hindered, but they have practically arrested, all investigation and fixed the status of pyorrhea very generally as "incurable."

The Assigned Causes for Pyorrhea.—The *local* cause universally assigned for alveolar pyorrhea is deposits of calculi upon the teeth. Those pretending to find it a disease ascribe it to the "gouty diathesis" or to some "constitutional *vice.*" These presentations are wholly inadequate to account for the manifestations of this depraved condition.

WHAT ACCURATE OBSERVATIONS REVEAL.

Accurate observations reveal the fact that deposits of calcareous matter (tartar) upon the teeth, while causing absorption of their supporting structures, seldom or never give rise to a condition of true pyorrhea. The teeth more frequently found enveloped in masses of salivary calculi are the lower incisors and cuspids and the superior first molars. Whilst these teeth may be loosened even to the point of exfoliation through absorption of the alveolus, due to increasing deposits of tartar, this condition is not alveolar pyorrhea. The development of pyorrhea in the mouth is wholly the result of local infection; an infection arising from the breath, from vitiated mouth secretions and excretions, and from chemical decomposition and decay of waste substances in the high temperature of the mouth. Toxins from these and other sources are constantly present in the mouth, and becoming cemented to the teeth, chiefly by the mucous secretion, form the so-called bacterial placques, which are retained day after day, often year after year, becoming stagnant, offensive and most virulent infection.

It is common to both sexes, but rarely, if ever, found to originate in connection with devitalized teeth. It seldom manifests itself before middle life, and then much more commonly in mouths in which practically full and crowded dentures are found.

Hereditary Influence.—Heredity has no influence whatever in the development of the disorder. That heredity has an influence in determining the shape and general characteristics of the teeth, is well known and readily conceded; but while certain shapes and characteristics of the teeth are favoring conditions, they are in no sense a cause of the trouble.

Temperament as a Factor.—Temperament as a factor in mouth pyorrhea is very imperfectly understood. As an example of wholly erroneous views respecting it, a professor speaking recently upon this point declares that the disease prevails more generally in the sanguineous temperament. The actual condition is exactly the reverse of this. It is extremely doubtful if a mouth with the typical marks of the true sanguine temperament—teeth of yellowish hue, small, rather than large, perfect in mould, shape and structure, short and having little cervical constriction, regular in development, never unduly crowded, occlusion perfect—was ever the subject of pyorrhea. I have never seen one. *Per contra*, the nervous, bilious and lymphatic temperaments, with all their compounds and admixtures, present formations and conditions of teeth and jaws which favor the retention of infection and the consequent development of pyorrhea. No classification of temperaments can possibly make the subject plain.

Local Conditions.—There are certain local conditions that promote the development of pyorrhea, and these demand most careful study. They are: First, the *presence of natural teeth in the mouth* (pyorrhea is impossible without natural teeth; second, the shape, character, number and placement of the teeth themselves; and third, the condition of the crown surfaces and the character and properties of the fluid environment of the teeth when the mouth is in repose. That the *presence* of natural teeth is necessary for the development of pyorrhea is manifest in the fact that it never appears in edentulous mouth, even though the supposedly favoring constitutional factors, uric acid and gout, may be present.

The general character of the teeth, whether they are dense in structure with only a thin layer of cementum enveloping the roots—a condition necessitating limited and difficult circulation in this tissue—or whether they are softer in structure and possessed, as is usual in such cases, of a thicker cemental layer, thus permitting freer circulation in the cementum, with increased vital energy to oppose external encroachments, present important local conditions *favoring* pyorrhea in the one case, and *opposing* it in the other.

The anatomical formation of the teeth also, whether having large and irregular crowns with strongly marked necks, and crowded into small misshapen arches, or whether the reverse of these conditions prevail, viz., teeth small or medium in size, crowns merging into roots without marked cervical constriction, and regularly set in well-developed arches—these conditions form marked predisposing or prophylactic features in the development of pyorrhea.

The third and most important factor among the local conditions for the induction of pyorrhea is the infection inevitably present on exposed crown surfaces of the teeth, especially the proximal surfaces. Even when considerable care is taken of them, viscid, toxic matter quickly accumulates upon untreated teeth, and is retained day after day, becoming stagnant and fetid, especially in the more inaccessible places, as between them and along the gum margins. These stagnant accumulations act to obstruct circulation in the gums, cementum and alveolus, and induce inflammation in all surrounding tissue. This infection on teeth is greatly intensified in virulence and activity by the high normal temperature of the mouth, as well as by toxic emanations from decaying tooth substance and decomposing food particles. These (and if there be any special local irritants, they are included) are the more active auxiliaries in originating pyorrheatic conditions, the subjects of which are legion.

Where Pyorrhea Begins.—The inflammation of pyorrhea begins in the tissues at some portion of the cervix of the tooth, more commonly on the lingual or palatine aspect or at some inaccessible point between the teeth, frequently between the larger molars.

In the anterior part of mouths which are the object of some care, the point of attack is usually at the angle on the right side of the lower jaw, at the interspace between the right cuspid and lateral, or it may occur one tooth farther back, between the cuspid and first bicuspid. The reason for this is found in the usually inefficient method of cleansing at this point. Using the right hand, the brush is passed over the incisors, then to the teeth upon the left side, whence it is turned to the right side of the mouth, leaving one interspace and usually one tooth untouched at the angle mentioned.

Not all teeth in any one mouth are ever the subject of pyorrhea at any one time. Strong, healthy teeth with living pulps are the special subjects of pyorrheatic attacks. Teeth which have been devitalized in comparatively young life, if the roots have been properly treated, are virtually, if not absolutely, immune. This is due to the fact that cemental structure is not solidified or changed in character or quantity after devitalization of the pulp and dentine, save as it may be increased in thickness by the pericementum through external deposit.

Evidence that Pyorrhea is a Local Infection.—I have never witnessed, in any case, the loosening and destruction of an entire set of teeth due to pyorrhea. With the displacement and loss of a single pyorrheatic tooth (much more a considerable number of such teeth) there is marked decrease in virulence of the infection, as well as lessening of the inflammatory exudates. Other proof is in the fact that the movement of the tooth is always outward away from the point of the inflammation, as in effort to expel the irritant from the mouth. A tooth is never forced toward the centre of the mouth, but always away from it, by the pyorrheatic inflammation.

Rapid elongation, protrusion or rotation of a tooth—movements at times attended with great force and considerable pain—indicate that the pericementum and cementum of the tooth are specially involved.

The End to which Remedial Effort should be Directed.—To characterize the destruction of tissue in pyorrhea as "molecular necrosis" may be well enough if it is understood that the inflammation arrests, partially or entirely, the nutrition of the parts. This is especially the case in the alveolus. It is the arrest of the nutritional process which is the real cause of the excretion of the tissues at the surface. There is no zone of dead tissue exfoliated as in true necrosis. It is rather a surface necrosis. That nutrition is partially, if not entirely, suspended in some cases, is plainly evident from the stagnant circulation, the tumefaction and purple color of the gums. The progress of the disease can only be arrested by the reinduction of normal nutrition. All remedial efforts should therefore be directed to the accomplishment of this end.

The Teeth a Convenience rather than a Necessity in Mastication.—When scientifically analysed the office work of the human teeth in the digestive process will be found far less a necessity than has hitherto been supposed. In reality they play but an inconsequential part, and one easily substituted, in the preparation of foods for stomach digestion. This statement, contrary to ordinary conception and to all previous education, may seem at first an absurdity, but when seriously considered, it will be made plain that while lack of mastication by the teeth interferes greatly with our convenience and pleasure, in no true sense can mastication be classed among the *necessities* to digestion. Foods are as perfectly prepared for the human stomach and all the digestive processes without the aid of teeth as with them. This fact stands out clear and most convincingly when we consider the sick, or when we look into the mouths of the old people of to-day. The sick or convalescent are nourished with prepared or predigested foods, and very many of the old people have edentulous mouths, *having regained general health after the loss of all teeth;* a goodly number are using artificial substitutes which sustain about the same relation to good natural teeth that an artificial limb does to a natural one; very few have kept any considerable number of useful natural teeth to old age. In all these imperfect and inadequate conditions there is little recognition or complaint respecting inability of mastication. Good serviceable natural teeth, coupled with vigorous general health in old age, is an anomalous condition, while the reverse of this—few or no natural teeth and general good health—is the rule of life. Extensive grinding tooth-surface is not a requisite for successful mastication, especially for cooked foods; the urgent demand should be rather for the free and comfortable use of the organs of the mouth, including such teeth as may be made aseptic and serviceable. The one requisite for avoidance of chronic digestive and other complaints is a mouth with teeth perpetually void of septic infection; hence the loss of septic teeth is by no means an unmixed evil.

Pyorrhea a Cause and not a Result.—Alveolar pyorrhea, with its necessary history of antecedent, long-continued septic mouth conditions, is not a result, but the unimpeachable *cause* of many serious systemic diseases, the etiology of which is not only unknown, but wholly unsuspected. Its diverse local manifestations, as the displacement of the teeth, the turning of them in their sockets, the formation of pus pockets beside the roots, the loosening of the teeth and their final exfoliation, are but minor sequelæ in comparison with the constitutional manifestations seen in the slow chronic pyemic effects.

If the effects of pyorrhea were confined to its ravages in the tissues of the mouth—the wasting of the alveolus and the exfoliation of teeth—it would be of inconsiderable importance; but the pernicious emanations from twenty or more square inches of infected tooth surface, carried in inhalation directly into the circulation through the lungs, and this augmented by the perpetual ingestion of masses of mucoid toxins—pus and other pyogenic products of the disorder—develop constitutional conditions of most serious import.

The Gravity of Pyorrhea not Recognized.—The gravity of states and conditions resulting from pyorrhea in the mouth has not yet been comprehended. If better understood, it would no longer be treated with comparative indifference as at present; on the contrary, it would awaken a feeling akin to alarm. As yet no comprehensive measures have been suggested by either medicine or dentistry to allay its symptoms or avert its consequences, and both professions stand in its presence to-day pitifully helpless.

How Pyorrhea Differs from Other Inflammations.—The inflammation of alveolar pyorrhea differs from inflammations and disease conditions in other parts, in that the septic products are of necessity discharged directly into the mouth, whence they inevitably pass into the digestive tract.

Clinical observation shows the confluence of alveolar pyorrhea with rheumatism or gout to be infrequent, and if associated at all it is as cause and effect—pyorrhea the cause and rheumatism or gout the effect; a condition exactly the reverse of the "gouty diathesis" theory.

The conjunction of pyorrhea and renal complications is far more common and serious. Uremia is a usual result of pyorrhea, due in greater part to the ingestion of inflammatory products constantly disengaged in the mouth, where they are mixed with foods and drinks, and thus inevitably washed into the stomach. And here again the relation is cause and effect—pyorrhea the cause, renal complications, more commonly diabetes, the result. This has been repeatedly and indisputedly proven through cure of the pyorrhea curing the diabetic condition.

Where Cause first Appears.—This infection appeals for recognition first of all in septic states of the breath. Poisonous deposits upon the teeth due to toxicity of the breath, are a constant menace, and principal factors in primal incitement of the disorder. Although in the aggregate such deposits may be meagre in quantity, they are exceedingly virulent and violently irritative to surrounding tissues; they are rapidly augmented by alluvium from vitiated salivary and mucous secretions, and from septic excretions, and not less by deleterious products from the necrotic condition of the alveolus and the perpetually irritated and inflamed gum margins at the necks of the teeth.

(Examples of breath infection appear in the surface discoloration of gold plates, gold and amalgam fillings, as well as in accumulations on the teeth.)

A Discovery Demonstrated.—It is matter for earnest felicitation that offensive breaths, a result generally of neglected mouths, repulsive mucoid oral fluids, and filthy conditions of the teeth, are wholly preventable and surely curable when they exist.

Treatment.—The cause of pyorrhea being a local irritant, whether that irritant be the presence of the tooth itself or an accumulated infection on the tooth, the beginning of treatment should always be directed to the removal of the cause. Not all teeth that have been loosened through pyorrheatic infection can be redeemed and made firm, comfortable and useful, for when the disease has progressed to necrosis which involves the alveolus and pericementum, the entire circumference of the tooth, the osseous structures about the root or roots having become absorbed until the tooth is rendered hopelessly loose—alveolar tissue once absorbed is never reproduced—immediate extraction is the proper treatment; or, if through development of a pericemental abscess, as not infrequently occurs in long-standing cases of pyorrhea, especially in connection with the molars, upper or lower, there is permanent discharge of pus from the socket, removal of the tooth is the one and only remedy.

Just here sharp distinction should be drawn between the ordinary apical alveolar abscess and the more occult and uncommon pericemental abscess. They are entirely unlike in character, in development, in prognosis and in mode of treatment. The former has been known and treated for years; the latter is of recent discovery, and is comparatively unknown. It was first differentiated by the author in 1897, and a full description of it embodied in an article which was published in the August number of the *Dental Cosmos* of that year, under the title "Pericemental Abscess." The closing paragraph of the article is as follows: "The prognosis of pericemental abscess is always unfavorable; have never been able to afford permanent or positive relief. The only remedy—extraction of the tooth." It would be a great gain to the profession if the conditions which lead to the development of pericemental abscess were more studied and better understood.

It should be the unvarying rule in the treatment of pyorrhea to speedily rid the mouth of all teeth which cannot be made permanently comfortable and useful. Teeth, especially molars, suffering from much alveolar absorption, if they be without natural occlusive antagonism, or any that can be rotated in their sockets, even though such movement be but slight, can never be made to re-tighten; their retention is a source of perpetual discomfort, a hindrance to mastication, and a positive menace to the health of the mouth. In view, therefore, of the utter inutility of such teeth, any attempt to retain them is a matter of sentiment alone; every other consideration demands their immediate removal.

Having extracted such teeth as cannot be made serviceable and comfortable, effort should be directed to the removal of all infection of whatever kind from all the remaining teeth. This infection may consist of masses of calcic concretions, coatings of stagnant inspissations, accumulations of septic matter on the exposed surfaces of crowns and roots, between the teeth, in pyorrheatic pockets, or in the many concealed nooks, crannies and irregularities found in connection with the teeth.

Dentistry affecting to see pyorrhea originate in some occult and unknown constitutional cause, has wholly failed to perceive or recognize the power of septic irritants found upon the surfaces of all untreated teeth. As there is no agency more surely destructive of the teeth themselves, nor one more provocative of general systemic disturbance, than the surface infection on them, so there is no more important operation, neither a more difficult process pertaining to the teeth, than the complete and successful removal of pyorrheatic infection. Even when attempted at all, it is an operation performed with such laxity and indifference as to render it of doubtful value.

Successful treatment for pyorrhea lies in the fidelity with which the toxic irritative matter is removed from the surfaces of the teeth, and rational after-treatment maintained. Constitutional remedies are wholly without avail except as cathartics, diuretics or sudorifics they may facilitate the expulsion of poisons already absorbed. Scraping of alveolar margins, removal of vital bone, massaging of the gums, and various other impractical modes of treatment have been suggested, but none of them indicate any true appreciation of the pathological conditions involved. If necrosed bone is present, which is seldom the case, it is to be removed; beyond this, the less disturbance to the tissues involved in removal of the infection, the better the results.

All treatment should be such as surgery would institute for any wounded, abraded or excised surface in other parts, the difference being the difference in the character of the tissues with which we are dealing and in their environmental surroundings.

There is no organ or tissue in the system to which a tooth, with its anatomical and physiological complexities, can be logically compared. If relieved of infection and restored to healthful condition, being fixed in the oral cavity the teeth are at once replunged into an adverse environment and resubjected to adverse influences.

What, then, can be done by medical interference? Practically nothing. It cannot be made too emphatic that the treatment consists in frequent and forcible change of environment—a change from bad to good in all that pertains to the teeth, and in all mouth conditions. Every effort should be directed to re-establish healthful nutrition, which has been interrupted, if not wholly arrested, in the surrounding alveolus, pericementum and gums. No irritative toxins from the breath, from mouth fluids, offensive food particles or from other sources should be allowed on the crowns, at the necks of the teeth or in any pyorrhea pockets. Every concealed recess and nook should be reached and carefully cleansed of all accumulations with suitable instruments; and this, followed by the polishing of all exposed surfaces, including pockets, recesses and depressions, between the teeth, at the gum margins, or wherever infection may be found upon the teeth. This can be effected by hand methods only. All wheels, brushes or other revolving instruments driven by power, should be wholly discarded. Specially shaped wood points—orange-wood is to be preferred—secured in suitable holders—porte polishers—should be used for this purpose. With these all parts of the mouth and all surfaces of the teeth can be reached and operated upon. The best polishing material is a fine pumice-stone. The dry powder can be taken up and carried to place on the wood points, previously shaped and freshly dipped in water for this purpose. Free application of the pumice-stone and vigorous use of the wood points are the most efficient agents known for removing infection from the teeth and not less for placing them in the most favorable condition to void further deposits. This treatment should be repeated every forty-eight to seventy-two hours at the beginning, and regularly continued until there are evident indications of abatement of the inflammatory condition and the closing of the pus pockets, when the intervals of treatment may be gradually lengthened until the limit of about one month is reached.

Every mouth with pyorrheatic tendency should be rigidly subjected to this prophylactic treatment at the hands of an expert operator for relief from the inevitable recurrence of infectious accumulations on and about the natural teeth. This treatment should be supplemented by *local* medication only. Internal remedies are not indicated except as tonics, or in special cases. Perhaps there is no better antiphlogistic or germicide for external use—and the mouth is an external cavity—than that rather disagreeable preparation known as phenol-sodique. It can be used *ad libitum* in the mouth and with great benefit, after each treatment. I have found it most efficacious applied to the gums on lint or bibulous paper.

After the second or third treatment the gums about the pyorrhea pockets and at the points between the teeth where there is greatest eversion of the festoons, should be touched regularly with deliquesced zinc chlorid. The handling of this preparation should always be upon wood points. A small stick with point shaped to reach the parts, may be dipped in the solution and applied as desired. It acts as a stimulant to the nutritional process. Tincture of iodin applied to the gums over a pyorrheatic cavity or tooth, is a valuable adjunct in the stimulation of healthful nutrition.

Results from the treatment as outlined have proven a source of astonishment, and not less of gratification, to many who have interestedly witnessed them. Long standing cases of pyorrhea, regarded as incurable and practically abandoned by the "constitutional cause" theorists, have readily yielded to this treatment and been cured in from six to twelve months. The recital of one case will suffice for many that might be cited in evidence:

A liberal-minded practitioner in the metropolis who had inspected some cases treated, recommended a pronounced and particularly intractable case—a gentleman aged about 55 years, with a full set of large, strong teeth, of the type peculiarly liable to pyorrheatic infection—for the treatment. The case presented no special constitutional disturbances save general malaise and an unexplainable, paroxysmal, nocturnal cough, for which he was being medicated without benefit by his family physician, who frankly admitted that he knew nothing as to the cause. Inspection of the mouth revealed general infection over all the teeth, especially the large molars and bicuspids; an offensive breath, deep pus sockets, considerable alveolar absorption and marked eversion of the gums between the molars, upper and lower. Two teeth only were decayed—the upper second molars—each having a small cavity on the distal face. The right lower second molar had a large pericemental abscess between the roots which was discharging pus freely; this tooth was sore to pressure and quite loose. It was immediately extracted and treatment instituted for the remaining thirty-one. The records show first treatment on November 18th; the second on the 21st, and the third on the 26th. There were three treatments in December, three in January, two in February, two in March, and two in April. Result, after five months' treatment, cessation of all pus discharge, complete clearing of the breath, retightening of all teeth, closing of the pus pockets, reformation of festoons, perfect comfort in mastication, clearing of the skin, and entire disappearance of cough.

Serumal Deposits.—Serumal deposits found upon the roots of teeth in pyorrheatic pockets are often difficult of diagnosis, and more difficult to remove. These deposits differ greatly in character and manner of formation from the salivary incrustations found upon the necks of teeth at the gum margins. They consist, for the most part, of smooth, hard masses of calcic matter, deposited from the stagnant fluids in the pyorrheatic pockets, cemented to the root in some irregular formation or inaccessible position, on lower teeth especially. They are not the occasion of marked inflammatory action, although the infectious matter is commonly deep seated. They create pockets beside the roots, in which deposits accumulate until the alveolus separates from the root throughout its whole extent. In many instances, the presence of these deposits can only be determined by the thickened condition of the overlying gum tissue—a characteristic of this infection—by the continued pus discharge under pressure, and by the persistent movement of the tooth, often attended with great force, in a direction opposite the accumulation. Serumal deposits destroy the life of the cementum and pericementum, and when these tissues have once separated, even though the deposits may have been perfectly removed, the vital union is never re-established. For this reason extraction of the tooth is frequently the only remedy.

Selections

ANKYLOSIS OF THE JAWS.

By G. Lennox Curtis, M.D., New York.

Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Stomatology, and approved for publication by the Executive Committee: Drs. E. A. Bogue, Alice M. Steeves and M. L. Rhein.

My present purpose in speaking is to report some causes of the varieties in permanent ankylosis and to show plans of treatment that I have found very successful. I do this in the hope that it will be of service to others. Preparatory to the permanent cases I will refer to cases of temporary ankylosis that I regard as unique and interesting.

Temporary ankylosis, so commonly found, can be so speedily treated successfully that little new remains to be told. Nevertheless, these cases sometimes cause much trouble to both patient and practitioner, when they result in serious complications, which may occur if proper treatment is not given in the early stage. See Garretson, Marshall and others for recognized methods.

The principal irritating causes of inflammation which lead to ankylosis of the jaws are exposed tooth pulps, retarded, malposed or impacted third molars, traumatism, cicatrix, tetanus, alveolar abscess, tonsillar, diphtheritic and septic infections.

Permanent ankylosis is the result of osseous formations within the joint, causing partial or complete displacement or arrest of the synovial fluid, a condition, however, that may not occur for months or years of immobility. Fortunately this is rarely met with, except in cases of rheumatoid arthritis, because of the great activity of the lower jaw its joint is usually the last to become affected. Inflammatory conditions arising from any cause should be corrected as early as possible in order to prevent cicatrical formations.

In one case of temporary ankylosis which had lasted for several days, I found on examination that it seemed to be caused by an exposed pulp. This case was immediately relieved by extracting from the pulp a drop of blood and applying a dressing of campho-phenique.

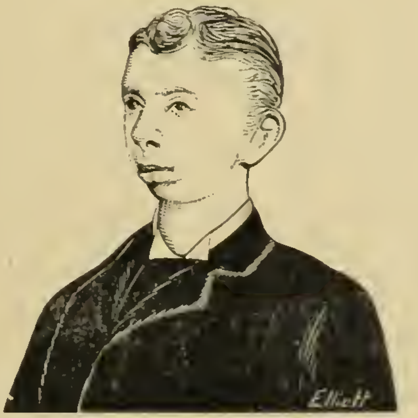

FIG. 1.

The cicatrical variety follows suppurations and surgical operations through the face, such as are resorted to for the removal of tumors and necrosis of the jaws. When this condition is found in childhood and continues for a considerable length of time, it is generally followed by an arrest in the development of the face and jaws. In illustration of this are the photograph (Fig. 1) and casts of the face and teeth of a boy, aged 16, who, when in his second year, fell from a window, fracturing his femur and also the inferior maxilla at the neck of the left condyloid process. The jaw fracture was not noticed until six months later, when the jaw was found to be ankylosed. The surgeon concluded that the trouble was due to muscular injury at the time of the fall. Thinking that in time the muscles would recover of themselves, he advised no treatment. Three years later another surgeon found the fractured jaw, but did not suggest any plan of relief. Later, indefinite different attempts were made to force the jaws apart, but were unsuccessful.

On examination, I found the ankylosis and the shortening of the jaws were due to the overlapping of the bones, which had become firmly fixed. The median line of the chin was considerably to the left. Several of the deciduous teeth which should have been cast off were present, and the mouth was in a generally disordered condition. I removed these teeth and reduced the inflammatory condition of the gums, and advised an operation for adjusting the ends of the fractured bones. I was told that several surgeons were consulted by the father, who was told that they would discourage surgical interference, consequently the boy was allowed to grow up in this unfortunate condition. My belief at that time was that the bones could be separated by means of a saw, or burr, and readjusted, and the ends of the fracture freshened and held in position until union of the bones was complete. He is now 28 years of age.

Another case of ankylosis, the cause of which is of more than usual interest, is that of a young woman who for several years had been treated for repeated granular growths in the sockets of the lower left molars that had been extracted. On examination it was found that all of the jaw, including the ramus back of the first bicuspid, was necrosed. To my amazement I found the third molar was malposed and lying at the neck of the condyloid process directly below the condyle. The treatment consisted of opening the periosteum sufficiently to permit the removal of the tooth and the necrosed bone, and treating the wound until bone was reproduced. The periosteum was retained as an interosseous splint until sufficient new bone had formed to hold the jaw in position.

By this plan there was no shortening of the jaw and no deformity of the face. It is obvious that this operation was done within the mouth. I was unable to ascertain whether ankylosis on this side of the jaw was complete or was of the temporary variety. By the use of the screw-jacks a complete and permanent use of the jaw was re-established.

I saw in consultation another case of permanent ankylosis, resulting from a surgical operation made through the face for the removal of a necrosed bone in the lower jaw, that resulted from an abscess on a molar. The cicatrix was several inches in length and about an inch in width. The patient told me he had been under treatment in a hospital for more than a year, much of which time his face was bandaged. I advised resecting of the scars, skin induction and forcible separation of the jaw by means of screw-jacks.

I am now pleased to be able to bring before you here a patient who, at the age of 14, was brought to me in June, 1893. At the age of six years the patient had diphtheria with extensive ulcers in the throat, the soreness from which continued for a considerable time after the disease had subsided. During this period pain was caused by opening the mouth, when the child was permitted to take liquid food between the teeth. This method of taking nourishment became a habit. Four years later, owing to toothache, she was taken to a dentist who, finding her jaws were ankylosed, referred her to a surgeon for treatment. Various methods, including the use of the "Grady screw," to pry and keep the jaws apart, were resorted to with slight results. Precaution was not taken, however, to protect the teeth from fracture, and some were broken and abscessed; gingivitis also resulted. Efforts to correct the ankylosed condition were finally abandoned and the jaws closed and became rigid. At the time the effort was made to force the teeth apart, the patient was encouraged to crowd solid food between the upper and lower teeth and crush it with the tongue against the roof of the mouth. This she was finally able to do with considerable success, but in doing this she had forced the lower teeth back and the upper teeth forward, causing some deformity. Figure 2 shows a cast of a face. Examination showed the patient to be anemic, but otherwise in a fairly good state of health.

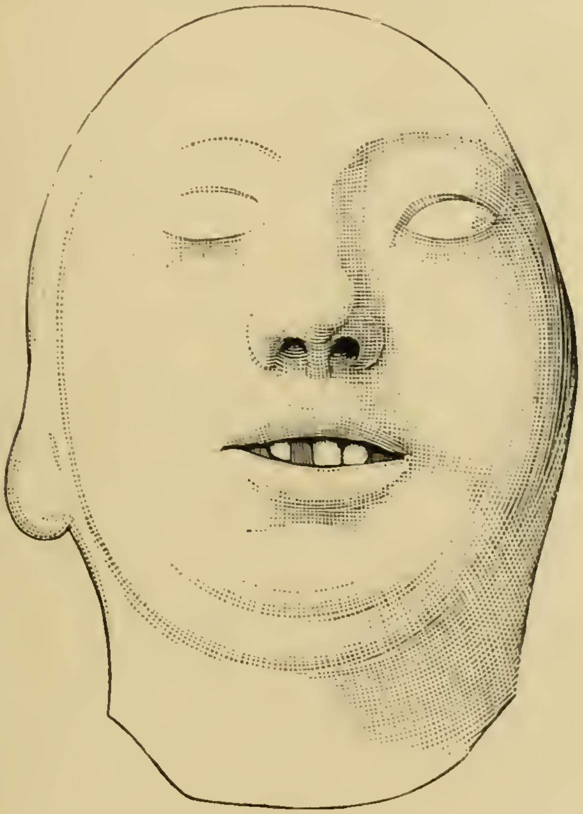

FIG. 2.

By forcing a wedge between the teeth I was able to secure one-eighth of an inch space on the left side. The reason for this was that on the left side there was only cicatrical ankylosis, while on the right side it was osseous. The condition of the mouth was deplorable. General gingivitis prevailed, and several of the permanent teeth were loose, while others were abscessed, and many of the deciduous teeth were present, thus retarding the full eruption of the permanent teeth. The crown of the upper right central was lost. By treatment much of the inflammatory condition of the gums was reduced, but not until the jaws were so far separated that the abscessed and the deciduous teeth could be extracted. My first thought was to devise and construct a mechanism that could force the jaws apart by causing an even pressure on the teeth. Figure 3 shows the depressor made of spring steel, which I was able to crowd between the jaws while the wedges were in position, and while the patient was under profound anesthesia. While the head was firmly held by an assistant I was able to put sufficient force to the depressor to gain one-eighth of an inch space. With this space I was able to insert a flexible double screw-jack, represented by Figure 4, that I also devised for this purpose. The surface of the hand depressor and the blades of the screw-jack were serrated, the object of which was to lessen the danger of slipping. If it is necessary to further reduce this danger, soft vulcanite rubber or gutta-percha may be placed on the masticating surface of one or more of the molar teeth on either side of the mouth. The blades of this jack were made of thin spring steel. The object of this was not only to cause even bearing on the teeth, but to prevent undue pressure on the teeth and luxation of the jaws. The screws were purposely made long, so that the patient might tighten or loosen the jack at will. By this simple mechanism the patient was enabled to adjust it and make as slight or as much pressure as could be easily tolerated. The patient was able to wear this jack much of the time both day and night. When three-eighths of an inch space had been secured, soft wax was flowed over the blades of the screw-jack and the jack was again put in position. By this means I was able to secure an impression of the antagonizing ends of the teeth, by which casts were made and splints of vulcanite were constructed, the approximating surfaces of which were made flat, so that when in place there was an equal bearing at all points. These splints enabled me to put greater pressure on the screw-jacks as well

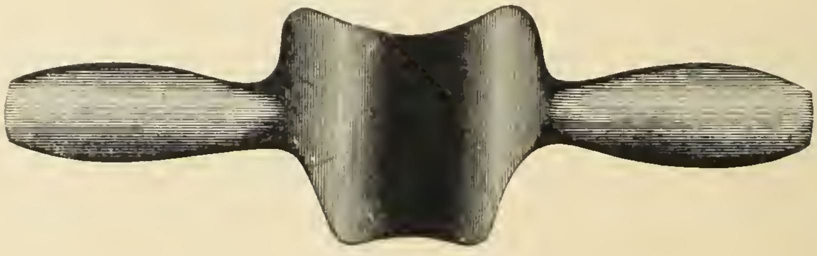

FIG. 3.

as eliminating all danger of fracturing the teeth. As the jaws opened, better fitting splints were applied. Chloroform was administered every few weeks, and all possible pressure was made to force the jaws apart. Almost from the beginning of the treatment there was an inflammation established in the right joint. While at times this operation was attended by considerable discomfort to the patient, which prolonged the work, it had much to do with the final success, because absorption of the osseous deposit within the joint was established, and by this constant agitation it continued until a fair action in the joint was established.

One of the things which retarded our efforts was the degenerated temporal and masseter muscles because of years of disuse. These muscles required re-development from that condition found in a child of six years to that of a young girl of sixteen. Until this was accomplished there was but moderate benefit derived from opening and closing the mouth. In order to develop the strength of the muscles of the face, as well as to elongate them, I devised a set of springs which were securely fastened in grooves cut in the approximating surfaces of the splints on either side of the mouth. (Fig. 5.) At the forward end of the grooves there was an opening made through the splint of sufficient size to accommodate the studs A, which were one-sixteenth of an inch in thickness and one-eighth of an inch in length. The principal object of these studs was to prevent the springs from slipping out of place, and to doubly secure them they were also wired to the lower splint. These springs were very stiff, and only with great effort by the patient could be compressed. In order to get the splints into the mouth with the springs in position they were applied while bound tightly

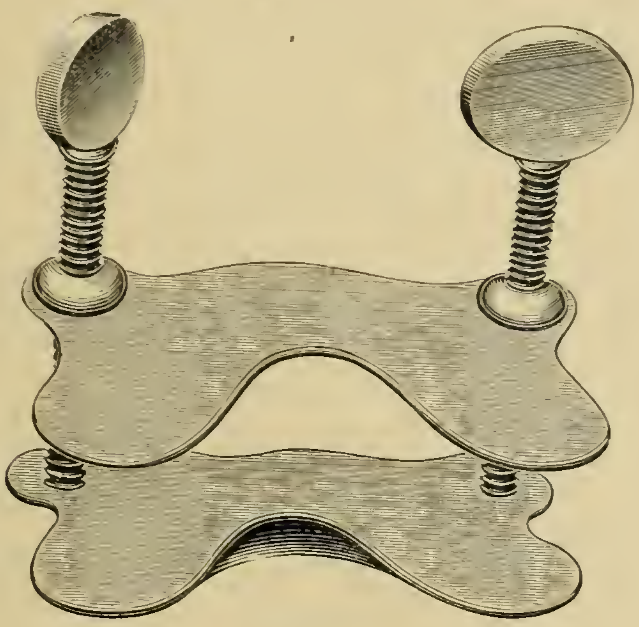

Fig. 4.

together, and when in position these ligatures were cut. At the end of one year's treatment the patient had about one-half the normal opening of the jaw, and for the next year the work of continuing the treatment was entrusted to her, because by personal illness I was absent from practice. On my return I was pleased to find that substantial progress had been made, the space gained was maintained, and that the muscles had materially improved. I took up the work again along the same lines and continued until almost the normal opening of the jaws had been secured, with, however, but little lateral motion, the adhesions which held the left side of the jaw readily giving way to the continued pressure of the jack. In the course of a year the patient's health demanded exclusive attention, and because of tuberculosis further maxillary irritation was at this time discontinued. Within the past six years, however, the patient has seldom found it necessary to make use of the springs; her health also has gradually improved. As you can see, the patient, though not robust, is in fairly good condition.

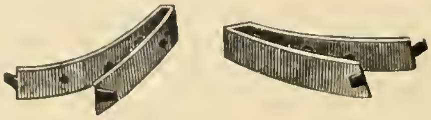

Fig. 5.

Discussion.

Dr. G. V. I. Brown (Milwaukee)—I think Dr. Curtis is in danger of being misunderstood, since he evidently describes conditions of true and false ankylosis. He speaks of permanent and temporary ankylosis and gives as etiologic factors malimposed third molars, pulpitis and conditions of that character. What Dr. Curtis really means is not ankylosis, but trismus. I think we ought to draw a very distinctive line between a muscular contraction of a temporary nature as described due to more or less direct irritation of the nerve trunks and a condition caused by inflammatory processes or degenerative conditions of the temporo-maxillary articulation. So far as operative measures are concerned, nothing can be said but the highest praise. These cases are extremely troublesome, and Dr. Curtis' results are a warrant that the proper methods were employed.

Dr. Charles F. Allen (Newburgh, N.Y.)—I have never had a case of osseous formation in the jaw, and I think they are very, very rare. The coagulation of the secretions as a result of traumatism which causes the ankylosis is sufficient to make a strong bar to the jaws closing as they should. I have never found that any application made to cause absorption was in any way effective. Pressure under chloroform and daily use of the screw opener by the patient would be the only means to cause return to normal conditions.—*Jour. A. M. A.*

TEMPORARY AND PERMANENT FILLINGS AS BARRIERS TO BACTERIA.

By A. E. Webster, M.D., D.D.S., L.D.S., Toronto, Canada.

(Continued from July issue.)

DISCUSSION.

Dr. Jonathan Taft (Ann Arbor, Michigan)—Ladies and Gentlemen, it is rare, indeed that an opportunity has hitherto been afforded us to meet so large a number of the profession as are assembled here to-day. In reference to this paper, I presume the unanimous voice of those who heard it would be that it is one of great value. It is beyond the ordinary papers that are presented upon such occasions. It is really, in one sense, a new line of thought, and experimentation. I hope the paper will impress every member present as to the value of experimentation along this line, as well as other lines of practice. I will not attempt to follow it in its details, but will simply draw some conclusions in reference to the value of such work and what ought to be regarded in all such investigations. This paper has reference to the management of pulpless teeth. No more important question could be presented for our consideration. This is one of the lines of practice in which there is a very considerable lack among the members of the profession; in ability to manage and to treat such cases and to avoid serious difficulties which so frequently arise from pulpless teeth, and anything that will minimize these evil results will be a boon. The experiments that have been detailed are interesting and valuable to everyone who follows them closely, and who takes in the importance and possibilities of such work. Certain things, however, should be borne in mind when we come to make experiments in this line that have not been referred to in the paper and I will call attention to them briefly. We should not hastily conclude that the experiments detailed and results obtained in glass tubes would be repeated in the roots of teeth, because the conditions are very different from those in the mouth. We have here, for instance, a glass tube of non-vital material, a very firm, solid material. But in regard to the roots of teeth we have there a tissue or structure that is possessed with great vitality. This vitality will modify the results somewhat. I presume the author of the paper took this into account as he should do. The performance of experiments like these out of the mouth is very different from those in the mouth. There are changes constantly taking place in the mouth, and do the best we may in imitating them, we cannot do it out of the mouth. The tubes here, of course, would have a certain temperature, and they might be supposed to imitate changes and vicissitudes of temperature in the mouth, but they cannot be reproduced exactly. Saliva is used and taken from the mouth, but the changes that occur in the mouth would hardly be imitated by these experiments. All these things must be considered. The canals of the dentine are filled with a material, that plasma which enters into and through which the nutrition of the living dentine is supplied. It is this material, then, which cannot be present in the preparations that have been detailed. This material undergoes a change very frequently—a very marked change in a short time after the destruction of the pulp. That ought to be estimated; it probably was estimated by the author of the paper. Those are some of the points that seem to indicate the great caution which should be exercised if we are to understand clearly the failure in correspondence to those conditions. One tooth is quite different from another. Some teeth, as you know, promptly, after devitalization of the pulps, become changed in color, indicating a change in the organic material that enters into the make-up of that tissue. In other teeth the change in color is far more tardy, indicating that there is more nearly a permanent condition of the elements that enter into the make-up of the dentine. I thought I would draw the attention of the members of this body to these facts, in order that they may be thought over. Some of us may endeavor to verify the experiments that have been detailed, or may see fit to repeat them and see how nearly we reach the conclusions that have been arrived at by the author of the paper. This paper is an unusually good one. It will stimulate us to work in this direction. There is hardly any line of practice, especially upon the natural teeth, where more slipshod work is done than in the treatment of the pulpless canals of teeth. Each one of us has a routine method which he pursues, and scarcely ever departs from it, nor does he seek to try a new experiment. It was formerly a common practice among members of the profession to make applications to the canals of teeth with a view to rendering them antiseptic, or preventing them from becoming septic again. Ordinary cotton, silk fibre, or linen fibre, or something of that kind was used as a stopping. This does not meet the indications of the case ordinarily, and I am glad our attention has been directed to that mode of practice, and that after awhile common sense will discourage it. The canal of a tooth, when treated, ought to be cared for in the way of exclusion of secretions from the mouth as thoroughly as possible or as any cavity that is to be filled. Moisture of the mouth should be entirely excluded during the time one is working upon it, and then the cavity sealed so perfectly that moisture cannot enter it when the rubber dam is removed. We should not rely simply on cotton, cotton and sandarac, or any of the other preparations alone. Oxychloride of zinc has been referred to as a valuable preparation for sealing a tooth canal. I have used with great satisfaction a solution of silver nitrate in the treatment of canals of teeth, simply placing it in cavities and sealing it as hermetically as possible, absolutely excluding moisture. The nitrate of silver acts upon the dentine and destroys any bacteria that may be present, and the lime salts are in a small degree dissolved by it. The oxide of silver deposit upon the dentine, I apprehend will prevent the occurrence or intrusion of micro-organisms. I have come to this conclusion from experimentation and from its use clinically for many years. One objection is that it may change the color of the tooth to which it is applied, but it ought not to affect the crown if applied to the root of a tooth.

Dr. G. V. I. Brown (Milwaukee, Wisconsin)—We have now reached a point where our old theories as to germs and the germ theory of decay will not satisfy us any longer. To me, it is very opportune that this paper should have been given at this time, when Dr. Miller, of Berlin, is echoing, through the *Dental Cosmos,* his views on subjects that are interesting to all of us. What is the relation of fillings inserted in glass tubes to the filling of root canals and cavities of teeth in the human mouth? Following my own line of reasoning, we must add to these results, which are hopelessly discouraging, the difficulty of inserting fillings of any kind in the human mouth, and the personal equation, the variation between individuals, which will undoubtedly give us even worse results. The question is, What of it? All of us know we have put in fillings that have lasted for many, many years, and we know that the great majority of them last a very much longer period of time than has been shown by the citation of these experiments; at least, in preventing caries, and the various suppurative processes due to pathogenic germs. Now, then, why do they? I removed from one of my central incisors the other day, in the laboratory, a gutta-percha filling that had been inserted approximately twenty-two years. There is no question at all but that that filling must have been leaking during those years. Judging from these experiments, moisture and bacteria gained access to that cavity. The question was, What is the condition of the dentine of that tooth under that filling? The rubber dam, the various instruments, my hands, and everything that touched the part were thoroughly sterilized. The tooth was isolated with rubber dam, and so far as possible the teeth themselves were sterilized. This gutta-percha filling was removed, and cultures taken from the bottom of the cavity, also from the outside of the tooth, and from the rubber dam. I know very well, to my sorrow, that I am not immune to dental caries, and in order that

that might be settled positively, cultures were taken from different portions of my mouth. I am sorry to say that somewhere the results of these experiments at present are wandering about hunting me, in the shape of a letter. I will get that letter undoubtedly during the day, when the results will be announced to you. If there be infection, what of it? We know that caries was not there. We know that germs in that situation have no longer those properties which tend to the production of lactic acid or those saprophytic conditions which tend to break down tooth structure. On the other hand, if there be no infection, we then know that germs could not have gained access to the cavity, could not have lived there, and the result is the same either way.

Dr. J. N. Crouse (Chicago)—The paper interested me very much, because it is on a line I am working on myself, not so much with the view, however, to find out what material is the best to fill the roots of teeth with, as what filling materials shrink and what do not. That, I think, is the most important question of all. For my own part, there is nothing equal to oxychloride of zinc as a root filling, provided you get a good quality, which is impervious to moisture, except that it is difficult to make sure that it does not draw away with the instrument. To avoid that, I wrap No. 10 gold foil around a rather small broach, carrying the oxychloride of zinc with that, and having it so fit that when the broach draws away, it leaves the gold foil there. As to the question of shrinkage of gutta-percha, I have had considerable experience with it, and I have been amazed to find the amount of shrinkage that takes place with gutta-percha. As to amalgam, I would not know how to put amalgam into the root of a tooth for the purpose of filling it.

Dr. George W. Cook (Chicago)—I have been very much interested in this paper of Dr. Webster, and attempted a short time ago to make a few experiments. Early in my work in bacteriology I spent a good deal of time in the laboratory with Professor Klebs, the man who discovered the bacterium of diphtheria. I talked with him on this subject, and asked him why it was that test tubes in bacteriological work were stopped with cotton instead of some other material. He told me at the time that Pasteur, who really might be called the father of bacteriological work, had experimented with all kinds of mechanical means to prevent the passage of bacteria, especially where there was any moisture. I called his attention to the filling material, and explained its manufacture and its manipulation as well as possible, and he said to me that it would be absolute folly for us to think of preventing bacteria from passing through the material under certain circumstances. He said, further, that there was always more or less contraction of the material, and that a change takes place in glass tubes. I mentioned the fact to him that I would like to carry on some experiments of this kind, and he said to me that I could not manipulate the material in glass tubes; that I could not apply sufficient pressure on the tubes to prevent the passage of bacteria through the filling material. He suggested that the only means would be to take an ordinary test-tube, such as is used for culture work, filled with bouillon, drawing the tube into a neck, as suggested by Dr. Webster. My tubes were sterile those that I have tested, and that has been recently. With the cotton stoppers in the tubes, I placed my test tube over a hot blaze, heated it to a certain point, so that there was elasticity to the glass tube, and the bouillon and the contents of the tube were perfectly sterile. Then, under as nearly aseptic precautions as possible, I filled the necks of these tubes in the way Dr. Webster has. My tests were not extended over the number of days that he has carried his; but the majority of my tubes were sterile after ten or twelve days. Those I have I intended to bring to this meeting, and should have done so if I had known exactly the nature of the paper that has been read. I could have shown a dozen and a half of the tubes that I filled, and the cultures are growing over the cement, while the bouillon in the lower part of the tube is sterile at the present time. Now, there are probably some objections to that. First of all, the position of the tube necessary, and the lack of moisture at the lower end of the filling. I, after six or seven days, when the infection did not pass through, turned some of these tubes down on the side, so that the bouillon in the lower portion might come up to the filling, and in some cases they became infected, while in others they did not. The results of Dr. Webster's experiments coincide very much with my own, in the majority of cases, with the exception that I do not find the cements are as easily penetrated as he has found in his experiments. It is known that when the same micro-organism is constantly in contact with such cements as are used in manipulative work, after some days or weeks there is an enzymic action of the bacteria on the cement, which causes a slight disintegration of the surface, and eventually, if kept in contact, will destroy the entire mass. What is the result? In the tooth structure we have not the constant contact of bacteria, such as we have in cultivation work in the laboratory. They are passed over the cement, cleansed off by fluids of the mouth, and the bacteria that produce all these various enzymic actions cause disintegration of almost anything. There is hardly anything that will resist the action of bacteria if they are constantly in contact with it. So in the mouth we have a decided difference from that in the ordinary culture tubes, such as I have experimented with. For instance, this portion of the tube (referring to a tube on the blackboard), I have filled with cement, and here are growths for ten or twelve days, at the upper portion of it. Necessarily, there will be disintegration, especially if I should add culture media to that culture, in order that its action may be continued. But in the mouth we do not have that constant contact, and Dr. Taft brought out one very interesting point, that is, the resistance of the human tissue, the resistance of the saliva, etc. We know in our experimental work that the saliva of different individuals has altogether an entirely different action on the products of bacteria. I have found pathogenic organisms many times in the saliva of individuals, and where I changed the saliva of one individual to another, I have rendered those micro-organisms non-pathogenic, consequently, the change in saliva is due largely to the electrolytic action of the saliva or the salts in the saliva, and all these factors have a great influence upon the action of the bacteria. The moment bacteria begin to grow in culture media, almost that instant they have changed the culture media from what they were originally. They produce acids or alkalies, or they may produce an enzyme that is capable of fermenting or causing disintegration of almost anything. It does not necessarily have to be acid. It is well-known that many of the bacteria of putrefaction do not produce acids, yet they will cause disintegration. While these experiments teach us something that is of inestimable value in calling our attention to the possibilities of these things, still, as Dr. Webster and Dr. Taft have already said, we have to recognize that there is a vital resistance to reckon with.

Dr. W. A. Heckard (Indianapolis, Indiana)—We have listened to a paper dealing with the scientific aspect almost exclusively, but I wish to say a few words on the empirical side, not because I am not a scientist, or am opposed to the things that were taught me as a student—quite the contrary. A graduate of Johns Hopkins, a bacteriologist, made some experiments with reference to the growth of different kinds of bacteria on or about different metals, using small disks of metal about the size of a five-dollar gold piece. These he placed in properly prepared and inoculated dishes, and he found that each metal had some power of keeping away the bacteria, some more than others, for there were zones of different widths around the pieces of metal. I forget all the different metals he used, but I do remember that gold and platinum were in the tests, and about them was a large zone where bacteria would not cross. Experiments were also made to show that a few bacteria, even of contagion, were not sufficient to multiply and do harm when taken into the human system. Bacteria will live a long time in a root canal without doing any harm, multiply a little, and not die. They may exist in root canals for years and do no damage. I filled some root canals years ago with cotton, saturated with oil of cloves, as once suggested by Dr. Flagg. I have taken some of these fillings out after ten years, and the odor of oil of cloves was still present. In some I could also smell the odor of bacteria. (Laughter.) My reason for mentioning this is, the essayist said that the antiseptic properties of medicines left in root canals disseminated. I do not think so, if sealed in, and I think they can be sealed in. Though there were some bacteria in some roots, they were doing no harm in my estimation, as they could go no farther.

Dr. Henry W. Gillett (New York City)—I want to express my appreciation of Dr. Webster's work, and to say a word or two along the side-line which he touched upon. When he suggested that probably one-half of the abscesses develop from the imperfect manner in which the roots of teeth are filled, or that they develop from inoculation, working in from the outside, rather than from the apical end, the thought occurred to me at the moment that probably nine-tenths of them came from the operator leaving the canal material which he thought he had cleansed, or what he put there, by not observing rigid aseptic precautions in doing his work. The profession must realize that in filling root canals we must observe rigid aseptic principles. Some of us do, but many of us have not in the past.

Dr. Oliver Martin, Jr. (Ottawa, Canada)—This subject is fraught with a great deal of interest, and in the light of Dr. Webster's admirable paper, one of the thoughts which occurred to me in connection with our theory of instrumentation is this: We should always be as clean and aseptic in our work as possible, but very often our manipulations are faulty. Aseptic precautions and thorough manipulation are absolutely essential to obtain successful results. So far as filling materials are concerned, I am an oxychloride of zinc man. I was brought up to be an amalgam man, as my professional relatives have been very successful in filling teeth with this material. I have seen teeth that were filled with amalgam that stood for eighteen or twenty years. With reference to the method of filling roots, I do not believe it matters much what is inside, provided the cavity is thoroughly and hermetically sealed. Trouble arises very often because we are not able to get at the parts. There is no royal road to success in this line of work, but we should strive to do the best we can at all times, and yet occasionally, after taking all the precautions we think are necessary to obtain good results, we are confronted with failure.

Dr. T. H. Milan (Little Rock, Arkansas)—Arkansas is a State bordering on Indian Territory. We do not know a great deal about bacteria or diseases of the mouth, because our patients do not have them. For thirty-five years I have been trying to follow in the footsteps of Dr. Taft and Dr. Morgan, and I have never failed to cure abscessed teeth, in thirty years' practice, if they were fixed right. (Laughter.) I have used carbolic acid for twenty-five years in my practice in connection with the filling of teeth, and the majority of those teeth are standing to-day, but the work was done right. (Laughter.)

Give me the tooth of any man in this city to fill, and if I can open it up right, and finish it right, I will save it.

Dr. J. B. Pherrin (Central City, Iowa)—We can hardly estimate the value of this paper. It has brought out a discussion we are all interested in, and it is to be hoped that something of practical value will come of it. Taking the experience of old dental practitioners, and what we see in the mouths of our patients, we must admit that it is the best, the most careful work that succeeds, and that many of our failures are due to carelessness. I came here not so much to discuss this paper as to tell you what I have seen, and perhaps all of you have seen. Not a great while ago I saw some cement fillings, oxyphosphate fillings, that have been in the mouth of a patient for at least twenty-three years. They were perfect then at the point of contact. They were hard. There was no sign of disintegration of the cement or of the enamel at the margin. That is something no one has been able to explain. We see fillings that have been in the mouth as long as thirty years; they remain in pulpless teeth in good condition, while the other teeth with normal pulps have been lost. Not a great while ago I extracted a tooth that Dr. J. B. Allen had filled twenty-six years before with chloro-percha, and it was the only firm tooth in the alveolus, and the whole mouth was full of teeth. I found, contrary to what one gentleman has said here, that chloro-percha was forced through the apical foramen. There was quite a quantity of it beyond the apical foramen. It is my practice not to use a gutta-percha cone, but to use chloro-percha, forcing it through the canal, if I can, and I think I have done perfect work in this way. I would like, if possible, to extract more of those teeth that as yet I have never been compelled to extract, but which I have filled in that way. Of those filled with chloro-percha I have never extracted one.

Dr. J. B. Willmott (Toronto, Canada)—I do not want to inflict too much Canada on this audience, yet I wish to say a word or two with reference to this paper, not from a scientific aspect, for I am not a bacteriologist, but to call attention to the point that so far as discoloration is concerned, it proves too much. If it proves anything at all, it proves that every one of these fillings should prevent the egress of fluid. It is quite true that tubes 26 and 24 are colored, but two were not. What does that prove? It proves that if all the fillings were perfectly put in these tubes none of them would have been colored. Just so with the others. If these tubes were properly filled, every one of these materials would absolutely have prevented the absorption of moisture. A word or two on this series of experiments which I happen to know something about. The tubes were not capable of resisting the pressure which any ordinary dentist would put on the root of a tooth. I tested them, and everyone of them broke under much less pressure than I think necessary to fill a root, so that these tubes, with all of these materials, were filled with a much less degree of pressure than is necessary to fill the roots of teeth in the human mouth. The chloro-percha ones showed better results, because these required much less pressure. I simply call attention to these facts, so that we may not draw unjustifiable conclusions. We want to know something about the conditions under which these experiments were performed. They are an object-lesson, and I have been exceedingly well pleased with the paper. So far as we can judge the experiments seem to have been performed under more favorable circumstances than with the roots of teeth filled in the mouth. If out of the mouth the results are unsatisfactory, it is not to be wondered at that they are unsatisfactory in the mouth.

Dr. G. S. Caesar, (Toronto, Canada)—First, I wish to congratulate Dr. Webster upon his scientific and thorough paper, and to say that it is the beginning of a work which we hope will prove more than has been shown to-day. With reference to chloro-percha and oxychloride of zinc fillings for roots of teeth, after over thirty years' experience, I must agree with the gentleman from Arkansas when he says that if the work is properly done, we will not have much trouble with bacteria. I was taught to fill root canals with oxychloride of zinc, and when I did it right they were satisfactory. When I forced the material through the apical foramen, I had trouble. That was my fault. I have been criticized repeatedly for filling root canals with oxychloride of zinc, yet this paper has demonstrated that it is one of the best materials for this purpose. I want to make one remark regarding chloro-percha. In making a solution of chloropercha, when you have applied the chloroform, stir it up and add eucalyptol until you have it in a nice, creamy state, then leave the cork out of the bottle and allow the chloroform largely to evaporate. You then have a solution which, if forced through the apical foramen, will cause less irritation than will chloroform.

Dr. J. H. Wooley, (Chicago)—When the essayist closes the discussion, I wish he would state whether attention was paid to the filling materials that were inserted in these glass tubes; whether those materials were rendered perfectly aseptic, and whether the same care was used in the preparation of all these materials? Furthermore, I would like him to answer the question whether he was careful in the introduction of the fillings into these tubes, so as to exclude the possibility of introducing infected air along with them?

Dr. Webster (closing the discussion)—I do not desire to say very much in closing the discussion on my paper. It would seem that the whole discussion can be summed up under three heads, vitality, dosage of bacteria, materials and manipulation. In the paper it is distinctly stated that because of the vital resistance the experiments could not be made in the mouth, and consequently, as the experiments were not made in the mouth, the vital question is not under discussion at all. It is a question of materials and not of vitality. Do certain materials, as commonly manipulated, resist the passage of bacteria? is the real question under discussion. We hear a good deal about what materials should be used to fill root canals. But if these materials leak bacteria (and there is no doubt about it) and the teeth give no trouble, why fill root canals at all? The fact is that much of the discussion as to whether canals should be filled with oxyphosphate or gutta-percha is waste of time, they are equally useless for the purpose for which they are inserted. We are driven to the conclusion that it is the vital resistance that prevents abscesses in such cases. It is quite true that a root filled with a fairly non-porous material has a better chance for future success than one not filled at all, which often becomes filled with a fluid which is a culture medium. In the first case the dosage of bacteria in contact with the tissues is very small, while in the other it is large. Nature can and does resist a small dose of bacteria, but when excessive doses are present infection, or rather inflammation, occurs. The discussion of the materials and their manufacture was rather limited. Dr. Cook mentioned corroborative experiments which were very gratifying to me. His criticism of the possibility of thoroughly packing against glass walls, and the change of form of the glass, is not quite good, because in my experiments all such difficulties were overcome by using heavy glass, flat base to cavities, ground inner surface of bulb, and a constant temperature of the glass. No change of form could come to the glass, and it is quite strong enough to bear at least ten to thirty pounds' pressure, which is all and more than is ordinarily put upon most fillings. The same is quite true of the root canal fillings. If any of the gentlemen desire to see these tubes they are here and I am certain they will be satisfied that they are strong enough to bear the insertion of a good solid filling. Dr. Cook says he did not find leakage of cement quite so soon after insertion as my experiments show. This may be explained by pointing out that most of the experiments I have reported were made as temporary operations and leaked much sooner than those which were made as permanent operations. The time of leakage in my permanent operations was about the same as those reported by Dr. Cook. Some one raised the question as to the materials not being sterile when inserted. The answer to this is that in my paper there is a statement as to how they were sterilized and as to how the control tubes were kept. The control tubes which were not put into the saliva were not infected, while those tubes which were put into the saliva were infected. This shows that the technique was accurate.

Proceedings of Dental Societies

FEDERATION DENTAIRE INTERNATIONALE.

The International Dental Federation will carry out the following programme in the Coliseum at St. Louis:—

Friday, August 26th, 11 a.m., Dr. Charles Godon presiding.

Address of welcome by Dr. William Conrad, of St. Louis. Response by Dr. Godon.

Address by a representative of the Louisiana Purchase Exposition.

Address by the Mayor of St. Louis. Response by Dr. H. A. Smith, of Cincinnati, O.

Short addresses by the representatives of the foreign countries present; after which the President's address, Dr. Charles Godon.

Report by the Secretary-Generale, Dr. E. Sauvez.

Adjournment, subject to the call of the President.

Commission on Education.

The Commission on Education will meet in the Coliseum Building, St. Louis, Mo., August 26th, at 2 p.m., Prof. Truman W. Brophy, of Chicago, presiding.

Address by the President, Dr. Brophy.

Dr. Charles Godon will give a resume of the status of dental education in France.

Dr. Wm. Mitchell, of London, will make some observations on technical education.

Dr. Gordon White, of Nashville, Tennessee, will make a short address on the present status of dental education in the United States.

Dr. R. B. Weiser, of Vienna, Austria, will give a paper on education.

Commission on Hygiene and Public Dental Service.

The meeting will convene Friday, August 26th, at 2 p.m., Prof. W. D. Miller, of Berlin, presiding.

Address by Professor Miller on "Dental Hygiene in Germany."

Dr. George Cunningham, of Cambridge, England, will present a report on Public Dental Service, by the late Dr. J. Franck, of Vienna, Austria, with comments. Other papers will be presented by members of the commission.

Dr. E. Forberg, of Stockholm, will give a paper on "Hygiene and Public Dental Service."

Commission on International Dental Press.

The meeting will convene Friday, August 26th, at 4.30 p.m., in the French Building at the World's Fair Grounds, Dr. E. Forberg, of Stockholm, Sweden, presiding.

Address by Dr. E. Forberg, President.

Paper by Dr. A. W. Harlan, New York, "The Advantages of an International Review."

The programme for Saturday will be published and distributed early Saturday morning.

Dr. Conrad has secured the use of the French Building for the members of the Federation Dentaire Internationale from 4 to 6 p.m., Friday, August 26th.

The Executive Council will meet at 6.30 p.m. in the Hotel Jefferson.

Members of the dental profession, affiliated with the dental societies of the United States, or in foreign countries, are cordially invited to join any or all of the sections of the International Dental Federation. On behalf of the Federation,

A. W. Harlan, *Vice-President.*

No. 1122 Broadway, New York, N.Y.

MONTREAL DENTAL CLUB.

The last meeting of the year of the Montreal Dental Club was held on May 13th, at the Windsor Hotel, and took the form of a dinner, followed by a paper by Dr. Geo. C. Ainsworth, of Boston.

With but a few exceptions all the members were present, and the meeting was a great success.

The President, Dr. C. F. Morison, occupied the chair, and seated on his right was the essayist of the evening, Dr. Ainsworth; on his left, Dr. F. W. Campbell, Dean of the Medical Faculty of Bishop's College.

Representatives from McGill, Laval, Société d'Odontologie Canadienne, and the press, were also present.

After dinner Dr. Ainsworth read his paper, entitled "Some Thoughts on Orthodontia, with the Description of a New Apparatus for Moving Dislocated Teeth into Position," which was very much appreciated by the members. This paper will be printed in the DOMINION DENTAL JOURNAL in a future issue.

NOVA SCOTIA DENTAL BOARD—RESOLUTIONS ON THE DEATH OF DR. COGSWELL.

At a meeting of the Nova Scotia Dental Board, held on August 3rd, 1904, the following resolutions were passed:

Whereas,—Through the will of an all-wise Providence we are called upon to mourn the loss of our old friend, Dr. A. C. Cogswell, who was most active in the organization of the Nova Scotia Dental Board and its first president. He was ever ready to serve this board, was zealous of its honor, active in promoting its interests, and elevating the standard of his profession. Through association with him, we had come to love him as a friend and to respect him for his high sense of honor. His life was consistent with the high ideals, of which he was an advocate.

Resolved.—That the Nova Scotia Dental Board hereby testifies to its sense of loss in the death of Dr. Cogswell, and that we extend to his family our sincere sympathy in their bereavement;

Resolved.—That this resolution be spread upon our records, and that a copy be sent to his family.

THE NORTHERN OHIO DENTAL ASSOCIATION.

The Northern Ohio Dental Association, at its forty-fifth annual session at Cleveland, Ohio, June 7th to 9th, 1904, passed the following resolution regarding the death of Dr. Jonathan Taft:

Whereas, In the death of Dr. Jonathan Taft, whose death occurred at Ann Arbor, Michigan, October 15th, 1903, the dental profession has lost a most valuable member, one who gave generously of his knowledge for the advancement of his ideals; a noble manhood, ideal operations and faithful services; a man, unselfish, gifted, kind and true; using his God-given talents for a noble purpose—serving man; and one whose fidelity and Christian character must ever be an example to the coming generations of an ideal dentist.

Be it Resolved, That we, his followers and members of the Northern Ohio Dental Association, in annual convention assembled at Cleveland, June 7th to 9th, 1904, express and record our appreciation of his noble life and generous contributions to the dental profession, and urge upon every member to live the life this gifted man lived, in order to bring to pass his conception of an ideal dental profession.

C. R. Butler,
Corydon Palmer,
F. S. Whitsler,
Committee.
C. D. Peck,
Recording Secretary.

EASTERN ONTARIO DENTAL ASSOCIATION.

The twenty-sixth annual meeting of the Eastern Ontario Dental Association was held in the British American Hotel, Kingston, July 14th and 15th. Officers elected: President, Dr. W. A. Leggo, Ottawa; Vice-President, Dr. Cavanagh, Cornwall; Secretary-Treasurer, Dr. A. W. Winnett, Kingston; Supervisor of Clinics, Dr. Ira Bower, Ottawa. Membership and Ethics Committee, Dr. Hanna, Kemptville; Dr. Sparks, Kingston.

The following papers were read: "Necrosis," Dr. W. T. Anglin, M.R.C.S. (Eng.), Professor of Queen's University; "Oral Bacteriology," Dr. W. T. Connell, Professor of Bacteriology, Queen's, and Assistant Provincial Analyst; "Anesthetics," Dr. G. W. Mylks, Professor of Anatomy, Queen's; "Personality and Ideals," Dr. Hermiston, Picton; "Interproximal Contact," Dr. Oliver Martin, Ottawa; Dr. A. H. Mabee, Gananoque; Clinics: Dr. Bentley, London; Dr. Woodrow, Brockville.

The meeting was very profitable and instructive and was greatly enjoyed by those present. A complimentary trip through the Thousand Islands was given by the local dentists, the visiting members voting it an ideal outing.

A W. WINNETT, *Sec.-Treasurer.*

LECTURESHIP VACANT.

Applications for the position of Lecturer on Physiology in the School of Dentistry of the Royal College of Dental Surgeons of Ontario, addressed to the "Chairman of Committee on Lecturers," 93 College Street, Toronto, will be received up to August 1st, 1904. Minimum duty each session, 50 lectures.

Directory of Official and Voluntary Dental Associations and Societies of Canada

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Nova Scotia Dental Board.

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Secretary—Geo. K. Thomson, D.D.S., Halifax, N.S.

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VOLUNTARY

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Secretary—W. Cecil Trotter, B.A., D.D.S., 412 Bloor Street West, Toronto, Ont.

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President—C. F. Morison. D.D.S., 14 Phillips Square, Montreal, Que.
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The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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BACK TO A THREE YEARS' COURSE.

Progress in educational methods is always slow. Forward a pace, and backward another, gaining a little each time. Just now dental education in America has taken the backward step. The Dental Faculties Association, by a vote of 27 to 2, says four years is too long a time to spend in obtaining a dental education. This vote was taken at a special meeting called at St. Louis, July 18th, 1904. Twenty-nine out of fifty-three schools were represented at this meeting.

The action of the National Dental Faculties Association is not always in accordance with its own rules, nor the best educational principles. The association is usually made up of the business managers of the various colleges. It is essentially a business man's organization. Very true, there are among them the educators of the profession, but they are few. The majority of the schools are joint stock companies, which must pay dividends to the investors. These dividends must be gotten from students' fees; consequently there must be students. If students can be made to comply with a high standard, well and good; but if they will not submit to it a low standard will do. The student dictates his own standard. The standard is held at the highest possible point at which students are likely to undertake the study of dentistry. It is a question of supply and demand. The colleges require so many students to run their institutions; if the supply is not forthcoming the requirements are lowered to suit. If students will not attend four years they may attend three, or two, if necessary. Thus it is quite plain why the time for study was reduced. There did not seem to be any other motive actuating the meeting save *dividends.* As to the constitutionality of the gathering there was none; as to the educational value of its acts, there can be no two opinions, and as to the effect on the profession, time alone will tell. There can be no possible excuse given for the retrograde act except that of commercialism. There was no mention of raising the preliminary standard as an offset to reducing the time. There seemed to be no thought given to the necessity for a better preliminary education; nor even any desire to show the educated world that a high dental education is at all necessary. There was only one idea in the meeting: reduce the standard to the point of getting students of any attainments.

The meeting at St. Louis lacked the strong hand of those who had been the stalwarts in dental education for so many years. It reminded one very much of the game we used to play, when children, "The cats are away and the mice can play." Those who had most to do with bringing about the four years' course were not present at this gathering. The resolution presented could never have passed if Barrett, Taft, Trueman, Black, Willmott, and many others of their stamp had been present. It seemed very much as if those who wanted a three years' course had gathered together and called themselves the National Dental Faculties Association, and forced their desires down the throats of the true sentiment of the association, as expressed by large majorities at its regular meetings for the past three years.

The charge has often been made by the profession that the colleges and their teaching all tend to commercialism rather than to professionalism. This charge has been combatted by the colleges with great vigor. They pointed with pride to the raising of the standard from a two years' course to a four years' course, and the raising of the preliminary requirements. Such arguments are all gone now. They have flattened out. The colleges raised the hopes of the profession, the public and other professional educators, only to dash them down. This vacillating body of educators commands the journals not to tell anybody what they have done. Well might they be ashamed of it! But, do they think the secret can be kept? Will the profession, or the public not find it out? The *International Journal* has already published it.

The whole affair looks very bad, but such acts only stimulate the profession to do better. The next time a four years' course is begun there will be no turning back. There will be such a strong sentiment behind it that a few political manipulators will be unable to control the Faculties Association.

SECOND BIENNIAL MEETING OF THE CANADIAN DENTAL ASSOCIATION.

The second biennial meeting will be held on Tuesday, Wednesday and Thursday, September 6th, 7th and 8th, 1904, in the New Medical Building, University Park, Toronto.

OFFICERS.

President, J. B. Willmott; Vice-President, Eudore Dubeau; Secretary, W. Cecil Trotter, 412 Bloor St. W.; Treasurer Frank A Godsoe; Registrar, S. W. McInnis.

Executive Committee: W. D. Cowan, Regina; S. W. McInnis, Brandon; A. E. Webster, Toronto; A. J. McDonagh, Toronto; Joseph Nolin, Montreal; H. Lawrence, Wolfville; J. H. Ayres, Charlottetown; F. W. Ryan, Halifax; J. S. Bagnall, Charlottetown.

Chairmen of Local Committees: Programme, A. E. Webster, 3 College St.; Clinics, J. E. Wilkinson, 402 Sherbourne St.; Exhibits, W. E. Willmott, 96 College St.; Entertainment, R. G. McLaughlin, 54 College St.; Transportation, Harold Clark, Temple Building.

As intimated in the preliminary notice issued June 15th, 1904, the second biennial meeting of the Canadian Dental Association will be held in the City of Toronto, on September 6th, 7th and 8th, 1904. The authorities of the University of Toronto have very kindly placed their new medical building at the service of the Association for the meeting. This building will afford ample and excellent accommodation for the sessions, and for clinics and exhibits. The committees in charge of the several departments are sparing no trouble to make it the best dental meeting yet held in Canada.

It is expected that the dentists of Canada will show their appreciation and their faith by attending in unprecedented numbers. All dentists legally in practice in any of the Provinces, conforming to the accepted code of ethics, are eligible for membership. The fee is two dollars, payable at the opening of the meeting. Admission will be by badge of 1904, which can be obtained from the treasurer or his representative on payment of the fee. Members may register in the corridor of the Medical Building at and after 3 o'clock on Tuesday, September 6th.

To reach University Park by street car from Union Station, take Yonge Street car to College and transfer to car going west, which passes University Park. It is earnestly desired that every member be in attendance promptly at 8 p.m., September 6th, for the first session, and at the hour named for each subsequent session. A time schedule of papers and clinics will be issued to members on arrival, and it is intended to "conduct the meeting on schedule time."

J. B. WILLMOTT, *President.*
W. C. TROTTER, *Secretary.*

PAPERS.

"Orthodontia," Edward H. Angle, St. Louis; discussion, Arthur Roberts, Toronto; "Preliminary Education of the Dentist," Frank Woodbury, Halifax; "The Education of the Dentist," Chas. Gordon, Paris, France; discussion, W. D. Cowan, Regina, and G. J. Clint, Winnipeg. "Artificial Appliances for Cleft Palates," R. Ottolengui, New York; "Cleft of the Palate and the Possibility of Articulate Speech," S. T. Church; "A Study of the Various Means of Inducing Local Anesthesia for Extracting Teeth," E. Souvez, Paris, France; discussion, Joseph Nolin, Montreal. "Instrumentation in Pyorrhea," A. J. McDonagh, Toronto; discussion, W. A. Stevenson, Montreal. "Surgical Operations by the Dentist," R. E. Loucks; Report of Chairman of the Executive Committee; Report of Committee on Army Dental Corps, Ira Bowers, Ottawa; Report of Chairman of Council; Election of Officers.

CLINICS.

Non-Cohesive Gold Filling, A. W. Thornton, Chatham; Selected, W. A. Burns, St. Thomas; Gutta-Percha Filling, S. Moyer, Galt; Tempering of Fine Steel Instruments, W. A. Brownlee, Mount Forest; Use of the Broach in Mesial Roots of Molars, W. C. Gowan, Creemore; Porcelain Bridge, G. M. Trewin, Collingwood; The Making of a Muffle for a Porcelain Furnace, Chas. Scott, Toronto; Selected, W. J. Woods, Toronto; Backing for Teeth in Bridge-Work, H. Hudson, Toronto; Something in Orthodontia, G. A. Roberts, Toronto; Matrix for Gold Filling in Anterior Teeth, Geo. Gow, Toronto; Selected, Chester Abbott, London; Selected, Jas. S. Magee, St. John, N.B.; Root Filling, C. A. Murray, Moncton, N.B. (Demonstrating Alumina Gutta-Percha Points; Fusing Porcelain with Turner Gasoline

Torch, A. J. Morrow, Maxville; Use of Non-Cohesive Gold for Filling Teeth, R. E. Sparks, Kingston; Local Anesthesia and Absence of Hemorrhage, G. M. Hermiston, Picton; Gold Inlay for Patient, O. Martin, Ottawa; Calk's Capping for Nearly Exposed Pulps, W. E. Willmott, Toronto; New Appliance for Widening the Dental Arch, J. S. Bagnall, Charlottetown; Cast Metal Dentures, R. C. Brophy, Chicago; Burnishing Gold, W. C. Davey, Morristown; Selected, J. E. Young, Detroit; Making of Cleft Palate Appliances, R. Ottolengui, New York; Surgical Operation, R. E. Loucks, Detroit; Technique of Making Gum Section Dentures (illustrating bite taking, grinding of sections, waxing, flasking, packing), W. M. Foster, Guelph; Porcelain Crown, A. J. Husband; Porcelain Inlay, F. J. Capon; Grinding and Backing Anterior Teeth in Bridge-Work, E. T. Campbell; Selected, F. B. Nichol; Selected, N. B. Mallory; Selected, H. E. Eaton; Selected, Ogden Winter; Selected, F. J. Capon; Something in Bridge-Work, W. M. Wunder; Method of Making Bridge-Work, Permitting it to be Fitted in, W. A. Scott; Something About Porcelain (Selected), R. G. McLean; Richmond Bicuspid Without Showing Gold, Geo. Grieve; Jacket Crown, J. F. Ross; Instrumentation in Pyorrhea, Gold Inlay, A. J. McDonagh; Selected, J. H. McCullough, Perth; Gas Administered, Using Teeter Appliance, Teeter, Cleveland, O.; Something in Porcelain, Edward C. Abbott, Toronto.

Note.—As the members register they will be given a timetable containing a more complete list of clinics, exhibits and entertainment, and a diagram of the building. The time will be set for each paper and clinic. It is the intention to adhere to it as closely as possible.

Entertainment.

Every preparation is being made for the hospitable care and entertainment of the members and their wives and other lady friends during their stay in the city. The Chairman or Secretary of the Reception Committee will be glad to answer any question from intending visitors that will aid in making their visit a more pleasant one. The members of the Committee will be known during the convention by their special badges—black letters on white silk—and it will be considered a favor if those attending the convention from a distance will make themselves known to the members of the Committee at the opening of the convention.

Wednesday evening will be given up entirely to a reception to the members and their ladies, in the magnificent salon of the King Edward Hotel. Will every member keep that evening free for this function?

All members of the Association and their lady friends are invited by the Faculty of the School of Dentistry of the Royal

College of Dental Surgeons to visit the College Building, at 93 College Street, from 5 to 6 p.m., Wednesday, September 7th, 1904, light refreshments.

R. S. McLaughlin, *Chairman.*
C. A. Kennedy, *Secretary.*

Transportation.

The Association is called during the Toronto Exhibition so that advantage may be taken of the reduced railway rates at that time. A return ticket will be issued at single fare, good for the two weeks, and a cheaper fare for shorter periods from all points in Canada, east of Port Arthur.

It is expected that a similar arrangement will be completed for points west of Port Arthur.

List of Hotels.

Below is a list of hotels about in the order of their rates. The Committee advises members to engage accommodation some time ahead:

King Edward, King Street East; Queen's, Front Street West; Rossin House, King and York Streets; Palmer House, King and York Streets; Arlington, King and John Streets; Iroquois Hotel, King and York Streets; Walker House, York and Front Streets; Grand Union, Front and Simcoe Streets; Elliott House, Church and Shuter Streets; Tremont House, Yonge Street; Daly House, Simcoe and Front Streets; Hotel Gladstone, Queen and Gladstone Avenue; Thomas', King Street West; New Russell, Yonge and Shuter Streets; Albion Hotel, East Market Street.

Exhibits.

S. B. Chandler, Toronto; S. S. White, Toronto; The C. H. Hubbard Co., Toronto; Temple-Pattison Co., Toronto and Montreal; The New Davis Co., Toronto; The A. C. Clark & Co., Chicago; The Ritter Dental Mfg. Co., Rochester; Lee S. Smith & Son, Pittsburg; The Dentists' Supply Co., New York; Ransom & Randolph Co., Toledo; W. V. B. Ames, Chicago; Klewe & Co., Portland, Me.; Lee Brothers & Co., Philadelphia, and others.

An effort is being made to obtain the exhibits of models and photographs of cases of Orthodontia which are to be shown at St. Louis, and later to be deposited in the Smithsonian Institute, Washington.

Dominion Dental Journal

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Original Communications

CANADIAN DENTAL ASSOCIATION.

[The third day's proceedings are published first, because they contain the reports of very important committees, which it is desirable to have before the profession at once.—Ed.]

The President.—Now, gentlemen, we have reached the close of our programme, so far as papers and clinics are concerned, and routine business now remains to be transacted. May I ask if any gentleman has any miscellaneous resolutions to move?

Dr. McInnis.—Mr. President and gentlemen, I wish to offer the following resolution: That the cordial thanks of this Association be tendered the University authorities for their courtesy in giving us the use of the Medical Building for this meeting.

Dr. Trotter.—I have much pleasure in seconding that motion. Carried.

Dr. Hanna.—I have been requested to submit the following resolution, seconded by Dr. A. A. Smith,—That the Executive Committee prepare a detailed statement of the receipts and disbursements connected with this meeting of the Association, properly audited, for publication.

Dr. McInnis.—Before that question is put, I would like to ask if there has been any detailed statement of the proceedings of that committee at Montreal?

Dr. Webster.—I wish to make a statement, Mr. President and gentlemen. At the last meeting of the Canadian Dental Association an arrangement was entered into by the Dominion Dental Journal to publish and give to each member a bound copy of the proceedings of that meeting. On account of some misunderstanding between the publishers and myself, they refused to publish that matter. I, however, went down to the publishers the other day and saw the manager, and I told him of the position they had placed me in, and he said that by the 10th of October those proceedings would be in the hands of the members who were in attendance at Montreal. I then asked him in regard to the proceedings that are now being presented, and he said that, understanding the arrangement better, he would be quite willing to see that these proceedings are gotten out as soon as they are published in the JOURNAL, and distributed to every member.

DR. MCINNIS.—I would like to ask Dr. Webster if that is going to include the items of business transacted by the Executive Committee. Now, those who were connected with that Executive Committee since the meeting in Montreal have not been able to get any record of the business that had been done. I could not get any record of the proceedings. I did not take a copy of the proceedings. I had certain duties to perform, but I had forgotten what they were, and I wrote to our President, but he could not give me any information, and I did not know where I was, or what I had to do. What I want to know is, if the business of this Executive Committee is to be published. That is the question I asked originally.

THE PRESIDENT.—That is, in the interim between the meeting at Montreal and this meeting.

DR. MCINNES.—I am not referring to that. I want to know more in regard to the business conducted by the Executive Committee at this meeting.

THE PRESIDENT.—The meeting of the full committee was called for Tuesday afternoon, but Dr. McInnis, owing to being delayed, did not arrive in time. But the local members of the committee, who acted as a sub-committee of the Executive Committee, reported to the full committee what they had done. They did nothing, of course, except in regard to the preparation of this programme, and what they had done was approved of by the full committee. Then the Executive Committee made a report to this Association, which was presented and adopted.

DR. MCINNIS.—And will be included in the minutes of the general meeting?

DR. ABBOTT.—I did not quite understand Dr. McInnis.

DR. MCINNIS.—I was complaining that we had no record of the proceedings of the last meeting. We have no record whatever of what was done at this meeting, or what the Executive Committee did.

THE PRESIDENT.—That is hardly correct, because there was a memorandum prepared by Dr. Cowan. I think the whole of the transactions which took place at Montreal were published in the JOURNAL.

DR. GODSOE.—Do I understand that it is to be a copy of the receipts and disbursements, or something to be made up which will show the receipts and expenditures of this meeting? Is that what my friend is after?

THE PRESIDENT.—What Dr. McInnis wants to know is, if the members of the Executive Committee have ordered all the expenses that have been incurred in connection with this meeting. What this resolution calls for is that that committee, acting from the general committee, shall prepare a detailed statement of the receipts and disbursements connected with this meeting of the Association, properly audited for publication.

DR. GODSOE.—That is not to be given at this meeting.

THE PRESIDENT.—Not at this meeting? As President of the Association, I am a little at sea as to what relation this meeting has to the meeting at Montreal.

A MEMBER.—It should not be difficult to make up a statement of receipts and expenses from start to finish.

THE PRESIDENT.—We can clean that up this afternoon. As President of the Association I have had some little difficulty in connection with the meeting at Montreal, which was an organization meeting, and which found its own finances, and used them, and made no return to the Treasurer; whatever deficiency there was, was made up amongst themselves, so that really, in preparing for this meeting, we began with a clean sheet, an absolutely empty treasury, and while Dr. Godsoe has been the nominal Treasurer, he has had neither funds nor an account book. My suggestion would be, that when the Executive Committee make this detailed statement, and have it complete, and they expect to have a balance on hand, that that statement, as well as being published with the balance in hand, should be transmitted to Dr. Godsoe as Treasurer, and that he should make an entry in his book, and then hand his book and the money over to his successor. We want to have a permanent record. Now, if that be the understanding of the Association, I will put the resolution. Resolution carried.

DR. WEBSTER.—Mr. President, we are to have five members appointed as representatives to represent Canada from the Canadian Dental Association, and I make the resolution that the chair appoint five members of the Canadian Dental Association to represent Canada on the International Dental Federation.

THE PRESIDENT.—That is the chair that is to be?

DR. WEBSTER.—Yes.

DR. THOMPSON.—I would second that motion.

THE PRESIDENT.—Before when? Within what time?

DR. WEBSTER.—Within a month.

THE PRESIDENT.—It has been moved and seconded that the incoming President do appoint in his judgment five suitable members of this Association to represent the Canadian Dental Association on the International Dental Federation. Carried.

THE PRESIDENT.—I was asked by resolution, as President, to nominate a committee on the revision of the By-laws. I think the committee should be in Montreal, for reasons which will appear presently. I therefore nominate Drs. Dubeau, Stevenson and Morrison as a Committee on the Revision of the By-laws, which committee is to report in the issuing of the notice for the next meeting, with whatever changes it is suggested to be incorporated. The report was presented and adopted.

THE PRESIDENT.—If you will allow me to call them a little out of the order in which they appear in the programme, I would like to ask for a report from the Dominion Dental Council. Now, let me explain that this Association has nothing to do with this Dominion Council; the Council is not under the control of this Association in any way whatever; the Council is formed by election; but as a matter of courtesy they are reporting to this Association, as made up of dentists from all over the Dominion, for information. I would ask Dr. Cowan to read that report. Report read, as follows:

MINUTES OF THE FIRST MEETING OF THE DOMINION DENTAL COUNCIL.

The first meeting of the Dominion Dental Council was held in the Committee Rooms of the Royal College of Dental Surgeons of Ontario, Toronto, September 6th, 1904, 4 o'clock.

Present: Dr. F. A. Stevenson, Montreal, Que.; Dr. H. R. Abbott, London, Ont.; Dr. Frank A. Godsoe, St. John, N.B.; Dr. Ayres, Charlottetown, P.E.I.; Dr. Frank Woodbury, Halifax, N.S.

Dr. J. B. Willmott, of Toronto, President of the Canadian Dental Association, was also present, but not as a representative.

Dr. Stevenson was elected Chairman, and Dr. Abbott acted as Secretary *pro tem* in the absence of the Secretary, Dr. W. D. Cowan, of Regina.

Dr. Ayres being present as an alternate to Dr. Bagnall, of P.E.I., it was moved by Dr. ——, seconded by Dr. ——, that Dr. Ayres be accepted as regular representative from P.E.I. Carried.

The motion adopted by the Executive Committee at the meeting held at Montreal, September 18th, 1902, providing for the formation of a Dominion Dental Council and ratified by the Convention held that date, was read and accepted as a basis for organization.

Reports from the Provinces were then called for.

Dr. Abbott reported for Ontario.

Dr. Woodbury reported for Nova Scotia.

Dr. Godsoe reported for New Brunswick.

Dr. Ayres reported for Prince Edward Island.

Dr. Stevenson reported for Quebec.

Reports from the Territories and Manitoba were held over until the representatives from those districts would arrive.

Moved by Dr. Woodbury, seconded by Dr. Godsoe, that Dr. Gendreau be accepted as an associate delegate from Quebec. Carried.

A lengthy and informal discussion then ensued, after which an adjournment was made until 9.30 a.m of the following day.

Wednesday, Sept. 7th, 1904, 9.30 a.m.

Present: Drs. Stevenson, Abbott, Godsoe, Ayres, Woodbury, McInnis, Cowan.

Dr. S. W. McInnis, of Brandon, reported for Manitoba.

Dr. W. D. Cowan, of Regina, reported for the North-West Territories.

Dr. Woodbury, of Halifax, submitted the following resolution from the Nova Scotia Dental Association, *i.e.*:

Whereas,—It is deemed desirable that the Dental Association of the Province of Nova Scotia express an opinion respecting the question of interprovincial standards for matriculation and registration;

Therefore be it resolved,—That the Dental Association of the Province of Nova Scotia hereby places itself on record as in favor of interprovincial standards of matriculation and registration, and further that the following should be such standards: (1) The minimum matriculation to be matriculation in Arts in any chartered University or its equivalent; (2) the professional qualification for interprovincial registration shall be equal to the best standard in the Dominion; (3) that we believe an arrangement must be made whereby men now in practice may secure Dominion registration who meet certain reasonable requirements and have the endorsement of the Provincial Association of which the candidate may be a member.

I hereby certify the above extract to be a true copy from the minutes of the fourteenth annual meeting of the Nova Scotia Dental Association, held at Halifax, N.S., on August 3rd, 1904.

F. W. Ryan, *Secretary*.

Dr. Ayres submitted the following resolution from the Dental Society of Prince Edward Island, to the Dominion Dental Council, *i.e.*:

Be it resolved,—That the Dental Society of Prince Edward Island put itself on record as being in favor of reciprocity in dental registration between the different provinces of the Dominion by a minimum standard of (1) matriculation in Arts and (2) by graduation from a school of recognized standard in dentistry.

J. H. Ayres, *Secretary*.

The above resolution was passed at the last annual meeting of July, 1904, of the above Society.

Moved by Dr. McInnis, seconded by Dr. Cowan,—That in the opinion of this Council the establishment of a Dominion Dental Council, by mutual agreement, among the several provinces is expedient, such Council to have power to grant certificates of qualification, which certificates are to be accepted as qualification sufficient to grant licenses to practise in any of the provinces entering into said agreement. Carried.

Moved by Dr. Woodbury, seconded by Dr. Cowan,—That the minimum matriculation for Dominion registration be as follows, viz.: Matriculation in Arts in any chartered Canadian or British university, provided that the standard of such matriculation shall not be lower than that of the third year in the Government high schools or academies of the provinces of the Dominion, together with the recognized Latin qualifications of said universities. Carried.

Moved by Dr. McInnis, seconded by Dr. Woodbury,—That applicants for registration before the Dominion Dental Council shall present the following qualifications as per classification (and upon doing so shall be registered):

Class A.—All those who are the holders of valid and unforfeited certificates of license in any of the provinces or the North-West Territories entering into the agreement, on the first day of January, 1905, and who shall produce required proof that they have been in regular, legal, ethical practice of their profession in any of the said provinces or the North-West Territories for ten years immediately prior to the date of their application, shall, upon payment of the prescribed fee, be granted the certificate of qualification.

Class B.—All those who, on the first day of January, 1905, are holders of valid, unforfeited certificates of license in any of the provinces or the North-West Territories entering into the agreement, and who shall pass the examination prescribed by the Dominion Dental Council for such holders of license, shall, upon payment of the prescribed fee, receive the certificate of qualification.

Class C.—All those who are, on the first day of January, 1905, *bona fide* students of dentistry in any of the provinces entering into the agreement, and who shall present to the Dominion Dental Council at the time of application for registration, certificates of having been four years a *bona fide* student of dentistry, and who shall pass the final examination prescribed by the Dominion Dental Council, shall, upon payment of the prescribed fee, receive the certificate of qualification.

Class D.—All those who shall enter upon the study of dentistry in any of the provinces or the North-West Territories entering into the agreement, after the first day of January, 1905, shall, upon making application to the Dominion Dental Council for registration, present the following qualifications, to wit:

(1) A certificate of having passed the matriculation examination required by the Dominion Dental Council. (2) Satisfactory proof to show that the applicant has been a *bona fide* student of dentistry for a period of not less than four years. (3) Produce a diploma or certificate of graduation from any recognized Canadian dental school. (4) Pay the fee prescribed by the Council and pass the final examination required by the Dominion Dental Council. Carried.

Council then adjourned until Thursday at 9.30 a.m.

Thursday, Sept. 8th, 1904, 9.30 a.m.

Present: Drs. Godsoe (Chairman, *pro tem*), Woodbury, Ayres, McInnis, Cowan, and Abbott, Dr. Stevenson reporting shortly afterwards.

Moved by Dr. McInnis, seconded by Dr. Ayres,—That the Dominion Dental Council be composed of two representatives from each of the agreeing provinces and North-West Territories, such representatives to be elected by the incorporated dental bodies of the said provinces or territories, and that the term of office of said representatives shall be four years, one-half of the number to be elected every two years; and of the first elected members, one shall be elected from each province and the Territories for two years and the other for four years. Carried.

Moved by Dr. McInnis, seconded by Dr. Ayers,—(1) That the officers of the Dominion Council be a President, Vice-President, a Treasurer and a Secretary-Registrar; (2) and the Secretary-Registrar shall receive remuneration for his services; (3) the Council shall have power to appoint examiners (4) and places and times where and when examinations shall be held, such examinations to be held once in each year; (5) the meetings of the Council shall be held once in each year at such time and place as shall be agreed upon. Carried.

Moved by Dr. Godsoe, seconded by Dr. McInnis,—That the foregoing be presented to the Canadian Dental Association this afternoon as a rough draft of the report of the Dominion Dental Council, the Council reserving power to revise the same, to have it printed and distributed. Printed copies to be sent to the representatives of each province and to be distributed to each license holder. Typewritten copies to be sent to each member of Provisional Council for revision and noting before said minutes are printed and distributed. Carried.

Moved by Dr. McInnis, seconded by Dr. Godsoe,—That each of the representatives of the several provinces and the North-West Territories upon this Provisional Council, present this report to the incorporated dental body of his respective district, and ask that such action shall be taken at the earliest possible moment as shall admit of the Council being called into active existence. Carried.

Moved by Dr. McInnis, seconded by Dr. Ayres,—That the Canadian Dental Association be asked to advance to the Secretary of the Provisional Dental Council the sum of fifty dollars as a loan to defray expenses of organization. Carried.

Moved by Dr. Abbott, seconded by Dr. Ayres,—That Drs. Woodbury, McInnis and Cowan be a committee, with Dr. J. B. Willmott as advisory member, with power to draft details of organization, examination, rules, by-laws, etc. Carried.

Moved by Dr. Woodbury, seconded by Dr. McInnis,—That this Council recommend for the consideration of the Board of Directors of the Royal College of Dental Surgeons of Ontario, that it would be expedient for the Board to accept from students in any of the provinces of Canada except Ontario, in lieu of articles of indenture, affidavits from student and preceptor to the effect that the said student has been four years a *bona fide* student in the office of such preceptor, exception only being made for such time as the student shall be in attendance at college, and provided always that the preceptor be a holder of an unforfeited certificate of license in the province in which he resides. Carried.

The Council then adjourned.

Discussion on Report of Dominion Dental Council.

Dr. Abbott.—Does that resolution mean that anybody who has been practising for ten years previous to the 1st of January, 1905, receives a diploma permitting him to practise all over the Dominion, or does it mean that when a dentist has been practising ten years he may receive this?

Dr. Cowan.—In reply to Dr. Abbott's question, I would say that it means both. As I understand it, those who have been practising for ten years on the 1st of January, 1905, can receive a Dominion diploma or certificate without examination, and upon payment of the fee. Anyone can receive the diploma if he has been in practice for ten years. If he has not been in practice for ten years, and does not desire to wait until he has been in practice for ten years, he can come up for examination, and if he passes his examination and pays his fee, he will receive a Dominion diploma. That was done to make it fair for everybody.

The President.—That applies, of course, to men who have been in practice ten years on the 1st of January next. The Association will understand that we have no direct power in regard to this.

Dr. Woodbury.—Mr. President and gentlemen, it seems to me that this is a proud moment for Canadian dentistry. The Provisional Dental Council that was elected by the various provinces and sent here to discuss this matter and formulate a scheme, has worked in the utmost harmony, and I may say that all the findings of this committee are unanimous. By this action Canadian dentistry is placed at the very head of dentistry in the world. (Applause.) The standards which have been erected as preliminary and professional are of the highest. We recognize in every way Canadian institutions of learning in our profession, and we believe that we have done right. This is not the proper time or the proper place to enter into any great detail in this matter; but I think it appeals to you all that the committee has found a happy medium and a happy compromise, with a little give and take all around. That is just what it should be; that is the way it occurs to us; and I have much pleasure in moving that this report be accepted and placed on the minutes as a matter of record.

Dr. Morrison.—Do I understand that that includes the Yukon Territory?

Dr. Cowan.—No; we cannot provide for that now.

The President.—You cannot provide for British Columbia at the present time. Let me explain this. A mutual arrangement is about to be entered into by the corporate dental bodies, and the arrangement was mutually agreed to. Two or three of the provinces may decline to come into this arrangement—Quebec may decline, the Yukon Territory may decline, and British Columbia may decline; but so far as the provinces can do so by mutual arrangement, six or seven of the provinces agree that these certificates will be accepted. Of course, if the other provinces do not enter into this arrangement, the men of these other provinces will be out in the cold. It is not a compulsory matter; it is a matter of mutual agreement.

Dr. Cowan.—I will just tell you what we have done in the North-West Territories. We have got an Act through our Legislature. Anybody from Quebec, or anywhere else, or any other portion of the Dominion of Canada, can come into the North-West Territories, and we ask you to do so. We do not want any examination from you. I say to you, come along to the North-West Territories. Our desire is, and we are going to put this matter right on a straight Canadian national basis.

Dr. Frank Adams.—I second the motion of Dr. Woodbury.

Dr. McInnis.—Mr. President and gentlemen, while I am not particularly keen for a fight at this moment, I think I will begin by having a fight with our friend Dr. Adams, because I had intended to do myself the honor of seconding the motion calling for the endorsation by this Association of the action of the Provisional Dental Council. However, that privilege has been denied me, and I may be allowed to say a word or two, although the hour is getting late, in connection with the report that has been presented to-day by the Provisional Dominion Dental Council, and what the committee means.

This is a particularly satisfactory moment, at least to myself, who has been acting so strenuously in the interests of the establishment of a national standard for the last six years, to see the report which has been presented to-day by this Provisional

Dental Council, and to have observed the unanimity with which the result was attained, each of the several provinces, through their representatives—perhaps with one exception—having expressed its desire to enter into a mutual arrangement by which there could be an interchange of registration, and by which there could be the establishment of a national standard, and it is a particular satisfaction to see that each of these representatives has given way where they felt that the establishment of that standard would interfere with certain rights and privileges in that particular province. It has been a particular satisfaction to observe the ease, the kindliness and the good spirit existing, and to observe the willingness manifested to do anything that was fair, and to reach a fair and honest understanding, and to put the matter upon a good, solid, substantial basis. The desire has been on the part of those connected with the Council not only to have our Canadian standard as high as the highest standard in Canada, but rather to make the matter secure by having the standard higher than the highest standard at present in Canada. With the matter in this shape, those who have to go to our several legislators to ask that the present Provincial Act be so amended so as to admit of this Act will be in a position to assure those legislators that there has not been any desire on the part of the province then applying for that legislation to keep anybody out, but rather to acknowledge as a standard that which the representatives from the several provinces have agreed upon should be the national standard. This will put those who go to the legislators in a position to ask that it be so arranged that we can accept a standard which will be accepted by most of the provinces in the Dominion of Canada. The Province of Manitoba and the Province of New Brunswick, and possibly some of the other provinces will require to have their present dental legislation so amended in order that this agreement may be carried out.

You will notice towards the close of the report that the representatives from the several provinces have been asked to take such steps as will enable the Council to come into active existence at the earliest possible moment. What does that mean? I can tell you what it will mean in the case of Manitoba. It will be necessary for our President to call a special meeting of the Dental Association of that province to have the action of the representative from that province upon this Provisional Dominion Council endorsed and ratified by them, and to have someone appointed to represent them at the coming meeting of the Legislature, and to have the Dental Act of the province so amended as to permit of the acceptance of that standard. So you will see that, while we have gone a considerable distance, still there is a great deal to be done, and if we have by this time next year the Dominion Dental Council in active existence, ready to receive applicants for registration, we will, indeed, I think, have done very well. (Applause.) Though it seems that at the present time there has been a great deal accomplished, there is yet a good deal to do. It may be that some of the provinces will not be able to come in. I have no doubt that you will find that some of our friends from Quebec who will be affected—in fact, I have already been told that the ten year clause will make it impossible for the Province of Quebec to accept the standard. I should be sorry if that were so. I would like very much to have all the provinces of Canada combined.

As to our friend Dr. Morrison's comment on the Yukon, I may say that we are not in a position to deal with the Yukon Territory. They have sent no representative here, and I do not know that they have the legislative body in that Territory which will enable them to deal with such questions. They have certain bodies, I know, but I do not know what powers they have and what they would be able to do in the way of dealing with a matter of this kind. I say, I do not know whether they have the power or not, but I am inclined to think that they have not. However, the territory has not been represented. We have the North-West Territories, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island, Ontario and Quebec.

I may be forgiven if I take a few moments to explain why some of these clauses are there. The classification of the applicants for registration before the Dominion Dental Council, you see, includes four classes. The first class is all those who are holders of valid and *bona fide* certificates or licenses in any province entering into the agreement for ten years previous to the first day of January, 1905, and the applicant shall produce the proof required that he has been in regular practice of his profession in any of the said provinces for the ten years immediately prior to the date of application for registration. That answers the question of our friend over there, whether you be seven or eight or nine years. You produce the proof at the time you appear for registration. That may seem to be too wide a clause; but, gentlemen, it was the only way to settle it that we could think of. You may say that this is an arbitrary provision for those who have been in practice for seven or eight years. But we incorporated this clause so that those who have diplomas now on the 1st of January, 1905, may at any time they have been in practice receive this Dominion registration.

A MEMBER.—Supposing a member should be practising a number of years in any one province, and applies for registration?

DR. MCINNIS.—In any of the provinces. It is so worded as to admit of that, so long as they have been in practice in any of the provinces.

DR. WEBSTER.—I might make this suggestion: Would it not do to put in "ethical practice"? (Hear, hear.)

A MEMBER.—Who would decide that?

DR. WEBSTER.—The Council or the Association in the province in which he lives.

A MEMBER.—I think there is one clause that would cover that. The province is not going to vouch for him.

DR. MCINNIS.—Now, gentlemen, if you will give me your attention another moment or two. If there are any questions to be asked, I would like to have them asked as we go along. As you know, this report is simply a rough draft of a report to be presented at this meeting, and we present it simply for your endorsation. We have a duty to perform. The representatives of each of the provinces are here, and they have to report to the several incorporated bodies of their individual provinces, and it is to these bodies that we must report. We submit our scheme now as a matter of courtesy, and we want to know that it meets with the endorsation of this assembly.

A MEMBER.—May I ask what provision is made for the production of other than Dominion certificates or diplomas?

DR. MCINNIS.—Those who have been in practice for ten years to the first day of January, 1905, are amply provided for by Clauses 1 and 2. Then those who have been in practice less than ten years are provided for by sub-section 3, that is, the following clause. Those who desire, after the first day of January, 1905, in any province of the Dominion, to enter upon the study of dentistry, will be compelled, upon presenting themselves to the Dominion Council for subsequent registration, to produce a certificate of graduation from one of the accepted schools of Canada. Now, I took up a few minutes of the committee's time in a few remarks, which my eloquent friend to my right was pleased to call a patriotic speech, in discussing whether or not we should admit the graduates of American colleges and give them a standing in this Dominion registration, and we decided, gentlemen, that while the profession of dentistry in the United States was in the position that it is today, they refusing to acknowledge our degrees and certificates, except upon certain limited terms and conditions, and they refusing to acknowledge even the right to practise in any state without passing an examination before the board, and other things of this character, that it was not the intention of those who sent us here to form a Dominion Dental Council to make such an arrangement as would tend to foster dentistry in any country, but rather to make such an arrangement, gentlemen, as would tend to foster the profession of dentistry in this Dominion of ours. We are not erecting barriers, but we are taking down barriers for Canadians on Canadian soil. We are at the same time uplifting the profession to a standard that will live, not only in Canada, but throughout the entire world; and we are at the same time, gentlemen, not closing up any of the gates by which our friends from the south have entered previously into any of the individual provinces. We are not establishing anything that will prevent our friends entering any of the individual provinces as they have done in the past. But what we are doing to-day is to have it so arranged that those who enter upon the study of dentistry hereafter, knowing of the existence of the Dominion Dental Council, and of the standard it requires, will feel themselves bound to attend a college that gives a four years' course, a college on Canadian soil.

A MEMBER (Fredericton).—We are very apt, in the consideration of this matter, to think that the only colleges outside of the Dominion are in the States to the south of us. We must not forget that there are also colleges in other parts. Of course, there is the fact that in England the diplomas we receive here are not recognized; but still the time may yet come when they will be recognized in England as well as in the States. Will there not be a time when they, recognizing the efficiency of our examination and the qualification for the Dominion registration, may wish that registration to be used? May we not make provision that, should those circumstances arise, we may reciprocate, not only in England but in other countries?

DR. MCINNIS.—In answer to our friend from Fredericton I might say that that very question came up for considerable discussion, and while we may have had a difference of opinion in other respects, we were all conservative in this matter, and we all feel that we would like to treat the British institutions with fairness, and with the widest open spirit, still we felt compelled to say that, while we were establishing this standard until they gave us some recognition, we could not as a body afford to give them this recognition.

Now, I would like to tell our friend from Fredericton that we have not destroyed any of the avenues by which our friends from Britain can enter any of the individual provinces, and they can still come to our individual provinces as they have done before, but we do not propose to give them the recognition of the Dominion Dental Council and the Dominion standard until they are ready and willing to recognize that standard as set up by the Council, and I think that is a fair position to take.

You will notice that by a part of the report a committee has been appointed to arrange rules, by-laws and other details. It is merely a matter of detail, to be completed by the Council when it is given actual existence. This Provisional Dominion Council, we as representatives from our several provinces have yet to report to our basal source of supply; we have yet to go back to the men who have appointed us; we have yet to make arrangements with our legislators on behalf of the several corporate bodies.

Now, if there are any questions to be asked by way of explanation, I would like to have them asked now.

Dr. Nolin.—I remember well what was said by our friend, Dr. Thornton, when this question was up two years ago, but I was simply at that time expressing what I thought to be the views, and still think to be the views, of the great majority of the profession in Quebec, and being one of the representatives, and knowing the sentiment, I thought, and I still think to-day, that it is not advisable to be too enthusiastic and to hasten where prudence might advance things quicker. I do not want to be misunderstood in this. There are a great many favorable to the Dominion registration. But what I mean to say is that there is one clause, the ten-year clause. With this clause, any man can come in and claim the Dominion registration. This man may not have been an ethical practitioner, and this man may not be a desirable man in the province.

The President.—He has to have the recommendation of the province from which he comes.

Dr. Nolin.—What power has the province into which he comes to refuse him?

The President.—He cannot get a certificate.

Dr. Nolin.—Unless he passes some kind of an examination to show that he is a competent man. However, this is all a matter of detail.

Dr. McInnis.—Our friends must remember that while that clause may seem to be one that will have a very great effect, still the number of those who have been in practice in any of the several provinces for ten years previous to this date are not so very, very many. However, the potent part of this clause, if adopted, is the standard it sets up and the treatment it gives to those who enter dentistry in Canada in the future.

The President.—There are not many men who have been in practice for ten years in any province who will want to pull up stakes and move.

Dr. Nolin.—Those would be the most undesirable ones.

Dr. McInnis.—Some provision must be made for those men.

The President.—May I read a resolution? Moved by Dr. Woodbury, seconded by Dr. J. F. Adams,—That the Canadian Dental Association hereby endorses the report of the Provincial Dental Council respecting the establishment of a Dominion Dental Council, and the erection of standards in accordance with that report. Now, gentlemen, we are not assuming any responsibility. Shall we endorse it? Carried.

The President.—Resolution moved by Dr. Cowan, seconded by Dr. Woodbury,—That this Association loan to the Dominion Dental Council the sum of fifty dollars, said fifty dollars to be returned as soon as the treasury of the Dominion Dental Council will permit of it. So far as we can understand, the Dominion is interested in this matter, and it requires money to start any enterprise. Carried.

INSTRUMENTATION AND FILLING OF CROOKED ROOT CANALS.

By Jas. M. Magee, D.D.S., St. John, N.B.

Read before the Fourth International Dental Congress, St. Louis, Mo.

Let me state at the outset that while a large measure of success has attended the practice of opening and filling root canals, as I have followed it, it is not intended to be an infallible method, because there are root canals which no man living can successfully open with instruments. The few cases I show will demonstrate the idea, and, perhaps, help to prove the claim I make, that 90 per cent. of all root canals we attempt to fill can be filled completely to their apical openings, and it may here be remarked that the apical opening is not always at the apex of the root.

With a desire to make this paper as brief as possible, I have confined myself to the subject of instrumentation, and the filling of the canals in crooked roots, and since molars more frequently than any other teeth have curved and crooked roots, a description of the procedure of opening and closing the canals of these teeth will serve as an illustration for all.

The treatment for fistulæ and putrescent canals opens up too large a field for discussion, therefore I shall not suggest anything in that connection, except to say that once the canal is opened, its treatment, if any is needed, will be simplified.

Of course, no one can say positively that the roots of any unextracted tooth are crooked, unless he is possessed of an X-ray apparatus, so the ordinary operator is obliged to depend upon his sense of touch to enable him to see, in his mind's eye, the shape of the root he is working in. Nevertheless, with few exceptions quite as satisfactory results can be obtained without the X-ray as with it. Before we begin opening the pulp canals, we examine for the possibilities of an easy or difficult operation. Youth is a factor in favor of easy access to the apical openings, since the canals are larger in early than in matured life. A perfectly regular arch will rarely contain teeth having badly curved roots, while contracted arches will usually contain teeth of this class; however, the only certainty we have of being able to reach the apical opening is a knowledge of the fact that we have once done so.

Many of the difficulties encountered may be entirely overcome, if, at the beginning, free access be obtained to all the canals. Free access does not simply mean that condition which will permit reaching the orifice of the canal. It means that so much of the tooth structure must be cut away as to permit the passing of an instrument directly to the end of the canal, if it is anyway nearly straight.

Let us, first, consider a lower molar (Figs. 2, 3, 4, 5).

Should the opening into the pulp chamber be through a cavity in the distal surface, we must cut forward through the morsal surface sufficiently far for at least a perpendicular entrance to the anterior canals (Figs. 3 and 4).

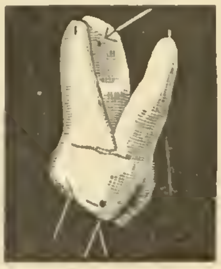
FIG. 1

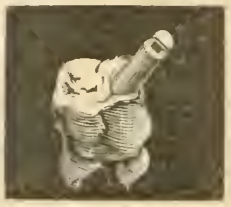
FIG. 2

FIG. 1.—The dart points to an apical opening almost one-eighth inch from the apex of buccal root of an upper molar. The wires may be seen protruding from apical openings of the other roots.

FIG. 2.—Shows the angle at which instrument enters posterior canal rendering it unnecessary to cut away very much tooth structure.

It is no economy of either time or tooth structure to abstain from cutting for fear of weakening the crown, since the crown will be of little service unless the roots are healthy and comfortable, and even if the ultimate result was likely to be as good (which it is not), the time consumed would be infinitely greater. However, the question of saving time must never be considered when the real issue is saving the tooth.

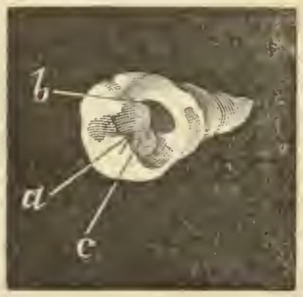

FIG. 3

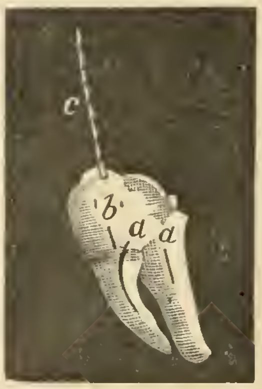

FIG. 4

FIG. 3.—Shows at *a* where the morsal surface must be cut away for at least a perpendicular entrance to anterior canals; *b*, *c* show broaches in canals.

FIG. 4.—Shows at *aa* the direction of entrance to canals; *b* shows the direction to which is necessary to cut the orifice of anterior canal for proper entrance of instruments; *c* shows broach standing in canal after the orifice has been enlarged.

When the carious cavity, through which the pulp chamber is perforated, is in the mesial surface, it is not necessary to cut away quite so much of the morsal surface, since the posterior canal may be easily reached without cutting to a perpendicular with the posterior wall of the pulp chamber (Fig. 2).

The roots of the lower molars almost always slant backward, and are oftentimes curved, particularly the anterior (Fig. 4).

The anterior roots of lower first molars always have two canals, and usually two are found in the anterior roots of the second and third molars also. It is quite easy to open the posterior canal, since it is large, the posterior root being rarely found with two canals. Those in the anterior root often diverge and then converge again (Fig. 5), sometimes to a common apical opening, and an explorer to enter the canal would have to be pointed decidedly forward (Fig. 5*a*).

So in order to approach the extremity of the canals we must enlarge the orifices laterally and anteriorly; that is, we enlarge the orifice of the lingual one toward the tongue, and a little forward, and the buccal we enlarge toward the cheek and a little forward. Two bristles stuck in these canals now would stand diverging, pointing outward and slightly forward (Fig. 5*b*).

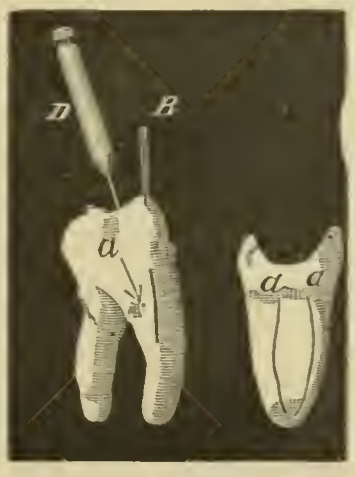

Fig. 5

Fig. 5.—Shows at *a* the direction of entrance to anterior canals with drill *D* in one before enlargement. *B* shows bristle in the other canal after enlargement.

A Gates-Glidden drill is one of the best instruments suitable for this enlargement, though a round bur must oftentimes be used also. While revolving in the engine the drill should be moved up and down, cutting widest at the entrance, though it should never be pushed as far into the canal as it will go. This cutting of course tends to straighten the canal. Having enlarged the orifice, we now pass an exploring instrument down the canal to determine whether we can open it successfully with instruments alone, or if we must use acid to facilitate its opening. The instruments I find best suited for the work in root canals are Gates-Glidden drills of large size, for enlarging the orifices, the four smaller sizes of Beutelrock drills for the right angle, as well as those for the ordinary engine handpiece, the two smaller sizes of Donaldson canal cleaners, and fine ivory broaches (Fig. 6).

The Gates-Glidden drills should be used in the engine and only for enlarging the orifices of the canals.

The other drills should *never* be used in the engine, but be worked with the fingers, because opening a root canal is too important a thing to trust to the haphazard results of a drill driven by engine power. The right angle Beutelrock drills may be used even in the molars, the short stem affording a firm grip for the fingers. The smallest size will frequently follow and open up a fine canal, even to its extremity, which the smallest size Donaldson cleanser will fail to open.

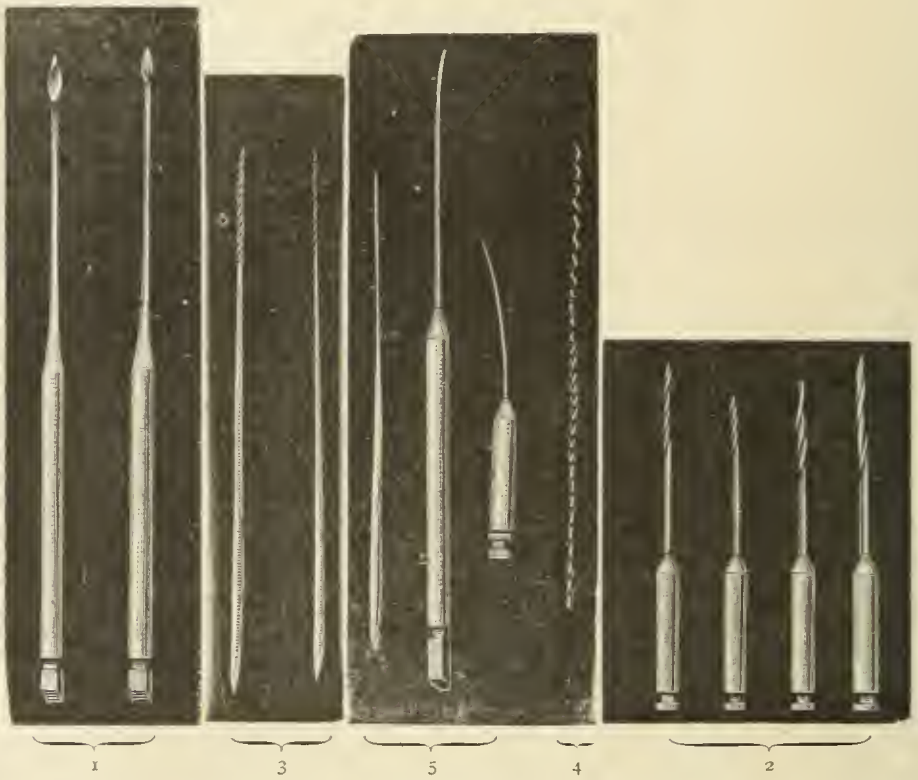

Fig. 6

Illustrations show Gates-Glidden drills (1); Beutelrock drills (2); Donaldson cleansers (3); Ivory broach (4); and special instruments ground down to follow fine canals (5).

To make an instrument which will follow almost any canal, and almost any curve, take the smallest Beutelrock drill and grind it down to a hairlike tapering point by pressing it with the finger against the side of a fine corundum wheel, and rotating it while the wheel is revolving. Then partially draw the temper. The finest Donaldson cleanser, with the barbs all ground away, and having the temper drawn, will also serve, but I like the material of which the Beutelrock drills are made, as it is especially tough. In addition to that, the shank of the engine point serves admirably for a handle, while the other instruments must be fastened in a broach holder (Fig. 6-5).

Having enlarged the orifices of all the canals, and determined that the case in hand demands the use of acid, we dip the points of our foil carriers in the acid (I prefer sulphuric, at least 50 per cent.); carry a drop to the canal when it will run in, and insert our fine instrument. Carefully feeling our way, we find it sticks at the bend of the root; we withdraw it, and again return it with a gentle pressure. We repeat this a few times, and then use either the smallest drill or cleanser, as may be preferred, to enlarge a little. A saturated solution of bicarbonate of soda pumped in with an ivory broach, having a wisp of cotton around it, will boil out any debris remaining in the canal. We mop out the soda solution, apply more acid, and repeat the procedure until sensation is experienced (Figs. 7 and 8, *aaa*).

Then, being thoroughly washed out and dried, the canal is ready for filling.

The same necessity exists regarding room for opening the canals of upper molars, though, as a rule, there is difficulty with only one, the anterior buccal. As the curve in this root, when it is present, is always backward, the enlargement of the orifice must be outward and forward (Fig. 9).

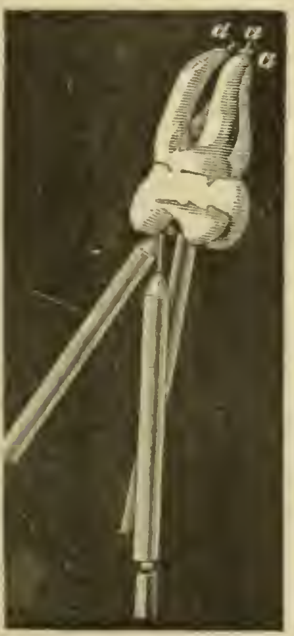

FIG. 7

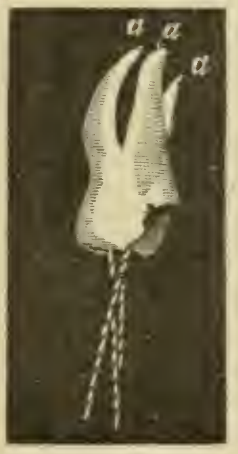

FIG 8

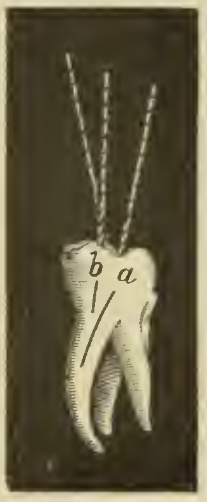

FIG. 9

FIGS. 7, 8 show teeth with crooked roots and at *aaa* the points of instruments protruding through apical openings.

FIG. 9 shows at *a* the direction of entrance to anterior buccal canal, and at *b* the direction to which the enlargement of the orifice must be carried for proper entrance to the canal.

Except in the molars of the quite youthful, it is almost always necessary to enlarge the canals, and they are best treated by using different sized instruments, the largest at the orifice, and the smallest toward the apical opening. It is well to have the canals tapering, so that after the canal filling is inserted, it may not be possible, by making pressure upon the superimposed filling, to force the point through the apical opening (Fig. 11, 1-2-3).

Given a large orifice and a canal graduated as regards enlargement, with three or four sizes of instruments, and we have an almost ideal condition for filling.

Having our canals now ready for filling, we decide whether we shall fill with gutta-percha or oxychloride of zinc. My choice for a canal which has been difficult to open is gutta-percha, since I feel sure I can reach the apical openings with it. Select a canal point longer than the canal, and which cannot be pushed quite to the apical opening, place it in the canal (Fig. 10), dip the foil carriers in oil of cajeput, and carry the drop which they will hold to the orifice of the canal. It will instantly run in. Catch the projecting gutta-percha and move it up and down. Friction on the sides of the canal, aided by the solvent action of the oil of cajeput, will make the gutta-percha fit the canal accurately. Should the patient warn us that sensation is experienced before the gutta-percha is felt to stick on being withdrawn, remove it, and snip a tiny piece off the end. When repeated trials have have satisfied us that it can just be felt, that it sticks on withdrawal, and that further pressure does not cause pain, we may rest assured that we have as perfect a filling as can be inserted in that canal (Figs. 10 (2), 11 and 12). The only objection that can be offered against the use of oil of cajeput, is in case the tooth is subsequently to be bleached.

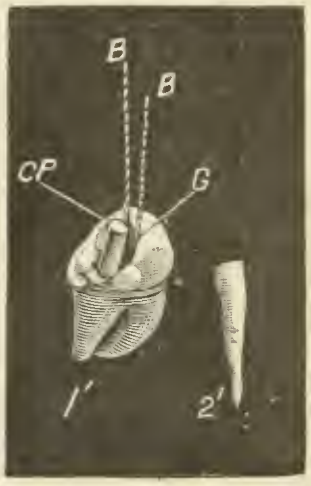

FIG. 10

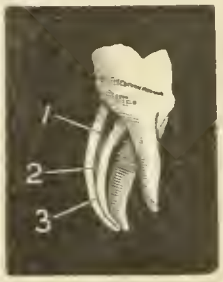

FIG. 11

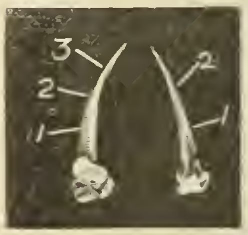

FIG. 12

FIG. 10.—1'. Same tooth as in Fig. 3, showing *BB* broach entering anterior canals, morsal surface having been cut away to *G*. *CP* canal point in posterior canal. 2'. Tapering canal point just as removed from canal which it filled completely.

FIG. 11.—Shows anterior root cut away with tapering canal filling, and at *1-2-3* the distances to which different sized instruments had extended before filling was inserted.

FIG. 12.—Shows two canal fillings removed after they had completely filled two canals, and at *1-2* and *1-2-3* the shape of the enlarged canal they had been in.

Should the canal be sufficiently large to admit the passage of an ordinary canal probe directly to the end, the filling may be done with oxychloride of zinc almost as quickly and quite as satisfactory as with gutta-percha. Measure the length of the canal with a tiny piece of rubber dam on the probe. Make a mix of oxychloride of zinc of a creamy consistency, and carry what will cling to the probe, when passed through it, to the canal. Push the probe to the end of the canal, and then carefully work it backward and forward, pushing a little of the oxychloride before it. In nearly every instance pain will be experienced when the filling reaches the end of the canal. After a few movements of the probe, it will be noticed that the little piece of dam does not touch the tooth when the probe is pushed in as far as it will go. Then we know that the upper end of the canal is plugged. Carry a little more of the mix to place on the probe, and repeat the procedure until the canal is full.

Until the success of some method of electric sterilization of root canals, which is now being worked out by men such as Zieler of Wurzburg, Brauer of Vienna, and Hoffendahl and Miller of Berlin, is demonstrated to be absolutely accurate, and this to be followed by the insertion of some imperishable canal filling, which will run like melted wax to the apical opening, hermetically sealing the canal, we will have to continue doing the best we can from our manipulative standpoint.

As consolation for the operator who has hitherto not been very successful in opening root canals, let me add, that if he follows the plan I have been endeavoring to explain, and gives earnest, conscientious effort to every operation, his failures will decrease, and he will be surprised to find how few are the canal fillings that he does not dismiss with an easy conscience.

PERICEMENTAL ABSCESS.

By D. D. Smith, D.D.S., M.D., Philadelphia, Pa.

Read before the Philadelphia County Medical Society.

The affection here denominated pericemental abscess was first noticed by the author about 1890, and first described by him in a paper read at the Tri-union Meeting of the Virginia State, Maryland State and District of Columbia Dental Societies, held at Old Point Comfort, Va., May, 1897. Prior to this all abscesses associated with the teeth and alveolus were styled alveolar abscess; the only exception to this being the occasional use of the meaningless term "blind abscess."

It was not until quite a number of these peculiar tumoric growths found on the roots of teeth—especially between the roots of molars—had been observed and noted that their distinguishing characteristics were made a subject of special interrogation and study.

Attention First Arrested.

While treating the putrescent root canals of a superior left bicuspid in the year 1890, two hitherto unobserved diagnostic conditions came prominently into notice. It was evident that the tooth was associated with an abscess, yet the most persistent efforts to relieve it by treatment through the root, were wholly without results; at the same time the previously cleansed and disinfected canals of the tooth remained entirely devoid of infection, Repeated dressings and medication during a period of three weeks failed to develop any odor or to make any impression whatever for the better. At the end of four weeks the tooth was extracted, when the cause of the trouble and the negative results in treatment, became apparent. Lodged in an irregular depression of the root, formed by a slight sharp bend, about one-quarter of an inch from the apex, was a glandular, fibrous tumor of the size of an ordinary pea, covered with globules of pus. The base of this tumor, or abscess, was relatively large and strongly attached to the pericemental membrane. It was entirely independent of the pulp and canals, having no communication with them whatever, either at the basal attachment or at the apex. I remember well, that in reciting this feature of the case at the meeting referred to, several who took part in the discussion refused to believe that such conditions could exist.

THE DAWNING OF RECOGNITION.

In the dawning of my observation of these pathological conditions, the recognition of them was so confused and imperfect—for in the beginning only chronic cases were apprehended—that it required several years to differentiate them from the ordinary aveolar abscess.

THE REVELATIONS OF AN ACUTE CASE.

The observation and conduct of an *acute* case in the spring of 1895, developed the missing diagnostic links, opened the way to a more perfect understanding of the etiology of the trouble, and suggested the nosology we have adopted.

This case is of peculiar interest, and is here cited in the hope that it may serve to fix the special pathognomonic features of the disorder. It was in connection with a 2nd left upper molar, a tooth of typical formation, in the mouth of a young M.D., a mouth marked, because of virulent infection on all surfaces of the teeth.

THE REVELATIONS OF AN ACUTE CASE.

The patient presented rather hesitatingly, complaining of an uneasy sensation only, which he hardly classed as pain, but which he located without hesitation in the offending tooth. Examination disclosed no diagnostic symptoms except a very slight loosening of the tooth and a barely distinguishable response to tapping and pressure. There being no evidence of periosteal irritation, and the pulp being alive, I was disposed to regard the complaint as having origin more in the imagination than in a real pathological state. Following an application of tincture of iodin to the gum over the affected tooth, the case was dismissed with the suggestion that the pain was probably due to some unusual or misdirected pressure in biting.

Apprehension a Diagnostic Symptom.

The next day the patient returned, with the local symptoms equally obscure; there was little evidence of inflammation, no swelling, no decided pain on pressure. The most prominent feature of the case at this stage was the feeling of apprehension, the decided conviction of the patient that there was something wrong with that particular tooth.

The case was a regular daily visitant for about eight days. During the first five days no strongly marked diagnostic features developed, but it excited interest, and not a little anxiety. The treatment consisted of external applications only, the quieting effect of which seemed to be most evanescent. Neither heat nor cold applied directly to the tooth and gums gave rise to any unusual sensations of pain or relief. There was no appreciable swelling, no marked periostitis or other evidence of the inflammation save the pain; this had become continuous, and was definitely located *in the tooth.*

On the fifth day a diagnosis of acute pericemental abscess was made. The tooth had become more loose and perhaps more painful; it responded more acutely to tapping and pressure, but the pulp was deemed to be alive. To assure myself that it was not implicated in the trouble, I decided upon devitalization.

(In Parenthesis.)

And here parenthetically I desire to put on record a protest against much that has been written in disparagement of arsenic for the devitalization of pulps, and present the one proper method for using this valuable agent.

Arsenic as a Devitalizer.

Although wholly contrary to accepted teachings and practice, the *arsenical paste*—white arsenic, morphia acetas aa, creosote q.s.—should *never* be placed in contact with pulp tissue; this application should always be made to intervening vital dentin.

The cavity in the tooth in which the application is to be made should be so shaped and arranged that the arsenic shall be securely confined in contact with vital, sensitive dentin only. There should be no possibility of its escape to other mouth tissues, either through the confining filling or around the margins of the cavity. If the cavity of decay cannot be made to securely confine the arsenic—and very frequently it cannot—or if it is desired to destroy the pulp in a sound tooth, a special cavity or large drill-pit should always be made *in another part* of the tooth, one in which the arsenic can be perfectly confined. The application may be made in a cavity remote from the pulp with perfect assurance, provided it is secured there in contact with sensitive dentin.

Why Pain and Systemic Symptoms Result from the Use of Arsenic as a Devitalizer.

It is placing the arsenic upon living pulp tissue that induces the pain, and it is the escaping of the arsenic from the cavity to the pericementum and gums, through or around the confining filling, (temporary gutta-percha stopping is the best confining medium) that has been and is, the cause of all supervening troubles—gum inflammation, alveolar absorption and necrosis—which result from the use of this agent.

Manipulation in accordance with the method suggested will insure painless and perfect devitalization in any tooth in from twenty-four to seventy-two hours, and that with no possible systemic injury, neither inflammatory manifestations in any contiguous tissues.

The Narrative Resumed.

Drilling through a small crown filling into the dentin, the tooth-bone was found in an exalted state of sensibility. Assured of my diagnosis, I determined, if possible, to reach the seat of the abscess and evacuate the pus in the hope of effecting a cure. An arsenical application was accordingly made to the dentin, which so perfectly destroyed the pulp that its removal was effected within thirty-six hours. This operation produced no disturbance, neither was there any incident following it. The removal of the pulp and dressing of the roots had no appreciable influence on the abscess symptoms; the soreness of the tooth, the continuous (not throbbing) pain, and the mental disturbance—a feeling of apprehension—continued unabated. I next drilled entirely through the crown, reaching the alveolus at the point which extends down between the roots. This operation was very disappointing in that it failed to evacuate any pus or to develop any odor. The third day after the opening was made upon the alveolus, there appeared unmistakable signs of infection in the left antrum. Unwilling to risk further treatment, the offending molar was extracted, when the cause of all this trouble became apparent. Just above the opening which had been made with the drill, and closely adherent to the inner side of the distal buccal root, was the peculiar but well-developed lobular sac of the abscess, with small globules of pus disseminated over its surface. The night following the removal of the tooth there was a copious discharge from the antrum through the left nostril. An opening was at once made through the alveolus into the antrum and treatment instituted through it. The antral cavity was syringed twice daily with phenol sodique, diluted about one-half with water, and at the end of two weeks the case was discharged entirely well.

Why This Case Possesses General Interest.

This acute case should possess general interest for the profession, not alone because it presents the distinguishing peculiarities and diagnostic symptoms of this affection, but more because it discloses the serious nature of the malady and points to some of its usual but unrecognized complications.

A Common and Serious Malady.

It is manifest that the pathological condition we are discussing is not only far more common than has hitherto been suspected, but that the infection resulting from it is the occasion of many grave systemic diseases as yet unsuspected. It is a condition which may be readily diagnosed when in a state of activity, but when chronic and apparently inert, it may be difficult of recognition. In the guise of innocent inactivity it gives rise to perpetual infection, and frequently arouses most serious systemic maladies, conditions far more to be dreaded than its most aggravated local expressions.

Many Cases Treated.

During the ten years which have followed the treatment of the case cited I have seen and treated a goodly number of these abscesses, both acute and chronic, but never with encouragement or pronounced success. One of the former occurred in my own mouth in connection with a maltreated, split molar, which eventuated in an obstinate double antral infection. Another—chronic—illustrated in this article (Fig. 3), was the occasion of a grave head trouble—a burning pain under the scalp, attended with exhaustion and despondency. These conditions were immediately relieved through extracting the tooth. Fig. 4 was the cause of the development of a severe double antrum infection. Fig. 5 was the occasion of a marked condition of malaise, attended with mental depression and hallucinations. In the two latter cases, extraction of the offending teeth afforded immediate and pronounced relief; the antrum trouble progressed rapidly to complete cure, and the malaise and mental depression to complete systemic restoration.

In but two instances, where pericemental abscess has been surely diagnosed, has there been any prolonged effort to retain and preserve the tooth. In these cases—both teeth superior molars—the abscesses have extensive basal attachment, which supplants and occupies the territory on the inner surface of the roots at their junction with the crown. These abscesses are quiescent, and have no perceptible pus discharge; while the teeth are somewhat loose, they are in use in mastication, and occasion no complaint. In both instances the teeth were experimentally retained; there is absolutely no hope of bettering their condition by treatment, either through surgical removal or lymphatic absorption.

THE ETIOLOGY AND NOSOLOGY OF PERICEMENTAL ABSCESS.

In view of what has already been stated, the etiology of this affection is apparent. The trouble is due to an irritant on the outer surface of the pericemental membrane, and, primarily, any external tooth-infection, more especially stagnant matter adherent to the necks of teeth, may cause it.

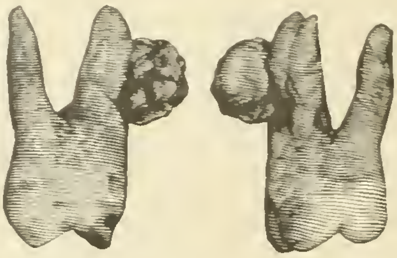

FIG. 1 FIG. 2

Two views of original specimen forwarded to me in Autumn of 1897, by a practitioner in Connecticut; unable to recall his name. Histological report made by Dr. Robt. Formad, Med. Dept. U. Pa. See Kirk,—"Abscess upon Teeth with Living Pulps," *Cosmos*, August, 1898. Cuts made by *Cosmos* press, 1897. Used by Dr. Kirk only, to illustrate two papers: the first mentioned above; the second, "Pericemental Abscess," before N.Y. State Society, May, 1900. The latter paper ascribes the discovery to Dr. Darby, and the making of the photograph to Dr. Cryer; see *Cosmos*, Nov. 1900, page 1149.

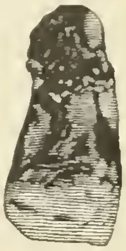

FIG. 3

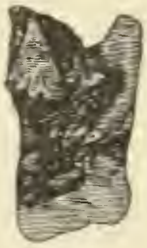

FIG. 4

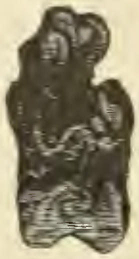

FIG. 5

FIG. 3.—Right superior 3rd molar; extracted July 4th, 1904. The occasion of serious head trouble.

FIG. 4.—Left superior 2nd molar; extracted July 21st, 1904. The occasion of serious double-antrum infection.

FIG. 5.—Right superior 3rd molar; extracted April 26th, 1904. The occasion of malaise and nervous depression.

CONFIRMATORY TESTIMONY FROM DR. FORMAD.

The histological researches of the late Dr. Formad, of the Medical Department of the University of Pennsylvania, as revealed in a private letter under date Jan. 20th, 1898, fully confirm the status ascribed this pathological condition as a new discovery; they also stamp its nosology as correct, and reveal why it may, and does, occur indiscriminately on teeth with and without vital pulps, and why it is wholly unaffected by any known method of treatment, either through the root, by surgical interference or by external applications.

Teeth Specially Liable to Pericemental Abscess.

Any tooth having a pericemental membrane, and a conformation to accumulate infection, may be the subject of pericemental abscess. Molars with large, bell-shaped crowns and constricted necks, because of their shape and location in the mouth, are more especially liable to it.

What It Results from.

The conditions preceding its development are neither systemic inclination through aberrant nutrition, nor a circulation floating a so-called gouty poison. It is not a result of infection from putrescent pulp tissue, nor from the prolific gaseous emanations resulting from nitrogenous decomposition within the tooth. Infection from such sources finds expression on the *inner* surface of the pericementum about the apical foramen, and eventuates in the ordinary alveolar abscess. The nucleus of this inflammation, and the resultant tumoric abscess, is in touch with some stagnant, septic irritant upon the tooth or teeth, the external surface of the pericemental membrane alone being involved.

Pus Discharge Small.

The amount of pus disengaged from these abscesses is relatively small. It is not confined within a sac or limiting membrane, as is generally the case with an ordinary alveolar abscess, but it is sparingly distributed over the irregular surface and within the folds of the tumor-like body which forms the abscess.

How a Pericemental Abscess Discharges.

The pus from a pericemental abscess never forces an outlet through the alveolus and gums in the form of a fistulous opening, neither does it come into the pulp canals through the apical foramen. It escapes at the edge of the alveolus, at the free margins of the gums—commonly between root bifurcations—or it may be found oozing around one particular root of a molar; frequently it is the palatine root of a superior molar or the distal root of a lower molar. Turgidity of the gum tissue at the point of egress marks the exact location of the abscess. No pus whatever can be obtained from a pericemental abscess in its earlier or acute stage. Even in chronic states the discharge is seldom profuse in connection with a single-rooted tooth. In a goodly number of cases where the abscess had assumed a hopelessly chronic form, I have found pus in large quantities and very offensive, in a few instances in connection with lower bicuspids, but more especially around lower molars. The incessant inflammatory action induced by this abscess not only increases its own substance, but it loosens the tooth, and through necrotic absorption forms, enlarges and deepens cavities and pits in the alveolus which become cesspools of pus prolific in infection.

The nerve centres, from my observation, are the special points attacked by the pyemic toxins from this abscess. Depression of spirits, loss of appetite, enfeebled digestion, malaise, headache, tonsillar and pharyngeal inflammations are the direct outcome. They also become the exciting cause of many far more serious troubles, both acute and chronic; among these we have found neurasthenic, gastric, gastro-intestinal, rheumatic and renal complications, including diabetes and albuminuria. From all these maladies we have not only afforded relief but effected cures by relieving septic mouth conditions, complicated with pericemental abscess.

POTENCY OF MOUTH CONDITIONS ORIGINATING SYSTEMIC INFECTION JUST IN THE DAWNING OF RECOGNITION BY MEDICINE AND DENTISTRY.

Since the publication of the article on "*Systemic Infection Due to Natural Teeth Conditions*," in January, 1903, there have appeared two papers by medical men, of marked significance; one by Dr. Robert T. Morris, of New York City, entitled, "*Infections of the Lymph-glands of the Mouth and Throat*," and the other, "*Buccal Antisepsis*," by Dr. E. Dunogier, Bordeaux, France. The former makes this significant and commendable remark: "We are finding at my clinic very many more infections proceeding from the teeth than are found in some other clinics," and then goes on to say, "One class of infections, very dangerous ones, have been frequently overlooked by dentists; these are infections following the removal of abscessed teeth. Patients die and the cases are not reported; they come in to be treated for pneumonia. There are patients dying this minute in this city from the result of having abscessed teeth extracted while in course of acute infection."

Dr. Dunogier speaks of "dangerous systemic results accompanying purulent conditions about the oral cavity," and recites the case of a "young man aged twenty-one, a sufferer from albuminuria for over six years," who was cured through, what seems to me, very indifferent attention to the teeth and mouth conditions, which had previously been wholly neglected. To prove positively "whether the mouth-infection had been directly concerned in the causation of albuminuria, the patient was directed to abandon temporarily all dental care. This was followed five days afterward by the reappearance of the albumin, and thus the original diagnosis was definitely established." Another case of a diabetic, is noted by Dr. Dunogier with similar treatment and like favorable results.

When the glad day shall dawn when medicine and dentistry shall fully recognize this field of most prolific and dangerous infection—the human mouth—and truly differentiate its pathologic conditions, the prevention of disease, the relief of suffering and the lengthening of the average of human life, will be accelerated a hundredfold.

If it is true, as Dr. Morris says, that in dentistry and surgery "we find whatever we are looking for," how important that we keep our eyes fixed on actual conditions. Actual conditions do not reveal that the extraction of a tooth with an ordinary alveolar abscess was ever the precursor of pneumonia. Pericemental abscess, with its pyogenic infection and enfeebling results, has undoubtedly been a predisposing factor in many cases of pneumonia. How important that medicine and dentistry distinguish between the two conditions!

Mouth conditions would appear very different to both professions if they could be viewed in the light in which they really exist. We do not need the hypothetical conditions of "thrombi" and "embolic infection," said to be induced by equally hypothetical "crushing of cancellous bone structure in tooth extraction," for the induction of systemic infection. Infection is found as a natural exudate along the whole linear gum margin about the teeth; it is found upon the twenty to thirty square inches of tooth surface in every mouth, between and under the teeth, and in crypts and pockets about roots. It is found in nasal passages, upon the tongue, on tonsils and pharynx. There is infection in the breath, in salivary and mucous sediment, in decaying food remains and in mouth debris of every kind. Add to these *normal* infectious states, the many serious pathological mouth conditions —decay in the teeth, putrescent pulp tissues, the retrograde metamorphosis of devitalized teeth, alveolar abscess, alveolar pyorrhea, and more than all the infection we are considering, pericemental abscess—and we have a combination of infection in the human mouth which should startle the community, and rouse to highest intensity the interest of medicine and dentistry alike.

The question may arise, is pericemental abscess a state of pyorrhea? My answer is emphatically in the negative. Pericemental abscess and alveolar pyorrhea are often associated in the same mouth, and they may have similar origin, but they are separate and distinct affections. I have never observed the two in connection with the same tooth. I believe the condition nonexistent. Pericemental abscess develops from a point of irritation on the external surface of the pericementum, usually some inaccessible depression in which the infection lodges and is confined. It is generally found between the roots of double or multi-rooted teeth, or it may be at the end of teeth having fused roots. Alveolar pyorrhea is more commonly found in connection with single rooted teeth; when associated with molars, the infection is between, rarely, if ever, under them.

Pericemental abscess is a characteristic tumoric growth, generally between the roots of teeth; alveolar pyorrhea is an inflammation beginning in the pericementum at the free margin of the gums; in its progress it destroys cemental and alveolar tissue, uncovers portions of the roots of teeth, develops pus, and imparts a characteristic odor to the breath. This inflammation leaves in its train not degenerate, sero-fibrous *growths,* but broken-tissue remains, calcic sedimentary matter, and other debris which destroys permanently all vital relations between the uncovered portions of the affected roots and the alveolus.

Pericemental abscess, virulently infectious, is incurable, except through loss of the tooth.

Alveolar pyorrhea, often equally infectious, is wholly amenable to rational surgical treatment.

Selections

AN ESTIMATE OF PORCELAIN AS A FILLING MATERIAL.

By C. N. Thompson, D.D.S., Chicago, Ill.

Read before the Chicago Dental Society, April, 1904.

The tendency of the age is specialization; even dentistry has been justly divided into operative and prosthetic. Recently these have been subdivided into specialties. The oral surgeon and orthodontist are almost necessary departures. But not so with those whose specialty may be crown and bridge work, either porcelain or gold, or who may specialize along the line of some certain material or method for filling teeth; for if his specialty is anything more than name only, he is not doing his patrons the greatest good, because, having specialized along one line, it is apt to become second nature for him to attempt to apply it to all cases, overlooking other possibilities. It is in the wise use of all the proven good materials at one's disposal which makes a man more serviceable to his patrons than were he to depend upon one or two. Fads come and go, leaving behind that which proves valuable. Amalgams and cements have had their day and have found their level; porcelain has passed the zenith of general attention, and has settled into its place as one of our best filling materials for certain cases.

Estimates are usually made by comparisons, and are really but a forecast based on experience or statistics. The definition of the word, " A valuing or rating by the mind without actually measuring," foretells that we are not expected to have any conclusive facts upon which to base calculations in attempting to place a value upon the material under consideration; if we had, an estimate would be uncalled for.

Our experience with porcelain, on a past record of about ten years, has taught us much in its manipulation, but not enough to warrant its general use as a permanent filling, because any filling that is to be (so-called) permanent. should last at least that long to be worthy of the name. Statistics in the form of carefully recorded ledgers with accurately marked diagrams prove of little value, because subsequent examinations are uncertain and infrequent; and when it is remembered that we have not had porcelain of real merit until very recently, it will be seen that the best that we can do is to base our calculations upon the present condition of fillings that are still doing service after a more or less extended exposure to the conditions found in actual use of the mouth.

In consulting records and notes, it became noticeable in the history of these fillings, that margins on occluding surfaces were failing because they lack edge strength, but that fillings on axial surfaces were holding their own. This naturally led to a decrease in the former and an increase in the latter, until now there is but little recorded relative to occluding fillings except as seen on incisal edges of the anterior teeth. But all thorough examinations with the magnifying glass of any strictly occluding filling of porcelain that had been in use long enough to wear out the cement at the margins, invariably showed chipped margins in proportion to the time that the filling had been exposed to masticating or occluding wear. This without an exception.

From this standpoint, it would seem that much that has been recommended recently relative to its use in all cases is illogical, and that its field does not extend into occluding cavities, except in the anterior teeth, where its natural appearance overshadows its frailties.

Its general use has been so strenuously advocated recently that in the light of the foregoing it would seem an oversight to pass the subject without calling attention to the unsound logic voiced.

We are informed by some that porcelain should be used in all cases, and that those who do not, refrain only because they lack the skill. Never was there a more grievous mistake in either case, for porcelain itself is not durable enough for all conditions, even in the anterior teeth; and in the second place, many operators who are skilled to the last degree in its manipulation, deny its use in posterior occluding cavities.

It is said—and it may be true—that porcelain extremists are men whose gold fillings are not proving successful, and that they, in following the usual course of cause and effect, unwittingly assume that what proves best for them must be good for all, forgetting that the mote which is all their own prevents them from correctly interpreting the signs of the times as written by the marginal failings of porcelain fillings at their own hands.

It might be well to let unsound sayings pass, knowing well that whatever we write in our books to-day comes before the stern tribunal of time, which will review and stamp justly; but there are many just starting in this line who, taking their cue from the extremists' standpoint, try the to them impossible, and fail—not because they were naturally lacking either mechanically or in the artistic, but because their instruction was unsound.

Enthusiasm in almost any line is necessary for success. To be enthusiastic in the beginning insures success finally. It is what keeps us from falling by the wayside. But there are as many degrees of enthusiasm as of other things, varying from passiveness to extremes. The enthusiastic porcelain worker is one who thoroughly appreciates its virtues and is alive to its frailties, using it wherever edge strength is not an important factor.

The extremist honestly considers it applicable in all cases, to the exclusion of other materials, and is like him who rode his employer's valuable horse to death to show its endurance—valuable only as an extreme example.

To beginners it might be said that there is reason to believe that all ordinarily skilful dentists could as easily acquire the skill to acceptably manipulate porcelain as gold, and that the reason why so many fail is because they make no determined, well planned effort to inform themselves. The same amount of time and pains applied to it as was spent in learning to manipulate gold foil would, on account of previous training, be more than ample for an actual beginning in the mouth, provided too much was not attempted at the outset. This is provided that all have perfect vision, and in this connection it might be mentioned that statistics secured by railway companies relative to the eyesight of those applying for positions, show that about 5 per cent. of the eyes examined were color deficient or color blind. Such defect in the eyes of a dentist would preclude all possibility of succeeding, and should incapacitate him for many other departments of dentistry.

The dental profession has accepted porcelain as one of the desirable filling materials; but because we have accepted it, we have by no means swallowed it whole as a panacea for all ills dental. It is not now a question of fitting and matching this material to the cavity and the tooth. Many can do either or both with success. The vital point is that the inherent weakness of the material itself is so far below gold in one particular—that of edge strength—that it ought never to be exposed to severe occluding strains, unless all concerned are satisfied with its lack of permanency and gradually increasing doubtful condition.

In comparing it with large gold foil fillings, it is now safe to say that the only point of superiority in favor of the latter is in edge strength. In every other way porcelain is better, and in some ways vastly so. But the matter of edge strength is of such great importance that at times it alone amounts to enough to warrant the use of gold in the anterior teeth to the exclusion of porcelain, and in the posterior teeth beyond the lines of vision in occluding cavities, porcelain is never indicated.

The points of superiority of porcelain over gold seem to be at least four, viz., natural appearance, resistance to thermal action, glaze and ease of insertion.

Regarding appearance, of course there is no comparison. All justly concede that porcelain is vastly superior, and this is its most recommendable feature, and it should, with all its frailties, be used in the six anterior teeth, except where the tooth in question is very thin, with a wearing underbite, or where the occlusion is direct and heavy. This does not alter the fact that nearly all cavities can be filled with porcelain, provided that the patient fully understands the risk and the operator wishes to accept the chances.

Resistance to thermal changes is also in favor of porcelain, proving slightly better even than gold inlays, and infinitely better than gold foil fillings, even though underlaid with cement.

Glaze or polish is also vastly in favor of the material in question. It is now considered one of the greatest factors in preventing recurrent caries near the margins of these fillings. Gold at even its highest finish does not begin to compare with it.

Ease of insertion, compared with large gold foil fillings, is also vastly in favor of porcelain; but in comparison with gold inlays it has no advantage. Gold foil fillings in lingual pit cavities in incisors, and in pit and fissure cavities in bicuspids and molars have the advantage of being more quickly inserted, and in the latter instance, more durable. Small porcelain fillings usually consume much time and are difficult to manipulate accurately.

When our porcelain compares favorably with gold, as regards edge strength, we may justly begin to use it promiscuously in large cavities. Until then, we will have use for our pluggers.

These fillings seldom break or crush. The weakness of all our porcelain to-day is lack of edge strength—a tendency to chip or crack away at the margins when exposed to stress. This, of course, is present at the incisal margins of all proximo-incisal fillings, but can be overlooked when its other virtues are understood. All chipping of margins is due, in part, to the indifferent way in which the cement supports it at that point, and would not occur so disastrously if the cement were stable.

Repeated examinations of well fitted fillings in proximo-occlusal cavities showed a rapid diminution of the cement on the occlusal surfaces so far as reached by masticating wear. Beyond that point the disintegration was slow and ceased entirely when about a line below the axial surface. The magnifying glass showed at first only increasing absence of cement at the margins on the occluding surface; later, the margins of both filling and tooth enamel began to chip away, thus opening new access to the cement, the absence of which created new opportunities for chipping, which is logically a progressive weakness, and means that porcelain is not indicated in such a cavity. A gold inlay in the same cavity would, judging from similar cases so treated, have been practically unchanged. There is no doubt but that cement is the correct method of filling teeth and is our hope for the future, but its present efficiency is so low that by itself it amounts almost to a farce. But teeth filled with any desirable, accurately fitted material cemented to its cavity, is beyond a doubt good practice, the mission of the cement being four-fold: retaining, supporting, sealing and non-conducting; and when used as in gold inlays, where it is possible to burnish the filling margins while the cement is yet plastic, it is possible to close the margin, sealing the cement in.

Next to a porcelain with a sufficient edge strength, our greatest need is a more durable cement, and it seems now the most insurmountable obstacle. It may be, however, that when the cement does appear, porcelain will no longer be needed.

Aside from the tendency to vacate the space between the cavity and filling, the opacity of the cement proves a great hindrance to concealing the union between the two. Fillings that appear an exact match previous to being cemented to place, are sometimes destroyed by its effect in this way.

Cavity preparation in the anterior teeth for porcelain, compared with that for gold, is at a disadvantage, because the incisal enamel margins must be left sharp, which is not mechanically sound practice, even though absolutely fitted, because it will chip if exposed to stress. And if bevelled margins are necessary in order to make them safe, then cavity margin preparation for porcelain is a weakness in itself not present when bevelled, as for gold, in any form.

Aside from this, cavity preparation for porcelain seems somewhat less destructive of tooth substance, because, while there are just as definite lines to follow, the adhesive setting modifies the need for deep or extensive undercuts in the dentine for retention.

Anterior teeth with frail labial enamel can, owing to the supporting setting of the filling, be prepared without cutting extensively, unless desirable. For the same reason, frail incisal corners, resulting from extensive proximal cavities, can and should be retained far beyond that point thought safe for gold.

Extensive cavity formation for any material in the six anterior teeth is continually menaced by the tendency of the tooth to chip along the development lines of confluence, which are marked by line-like depressions labio-lingually across the cutting edge between the three little tubercles found on recently erupted incisors. These lines divide the incisal two-thirds of the tooth crown into three lobes. Calcification begins in these lobes separately, and the grooves or lines are the marks of the after confluence of these lobes. Just why teeth split along these lines is a question, but that they do is beyond a doubt a fact, and one that accounts for many failures. But it is of little import when preparing for adhesive fillings, except when the incisal cavity outline approaches it closely, when the cavity must be extended to or just beyond it, for if left thin, it sometimes breaks away, leaving a decided notch between the filling and the balance of the tooth.

Porcelain does not last well in cavities resulting from chemical erosion, unless they are extended well beyond the limits of chemical action, which, owing to the hypersensitiveness of cavities, is seldom accomplished; the significance of which is that porcelain is not often indicated in such cavity.

Cavity preparation for this material in the posterior teeth is another problem, because if the margins are not to be exposed on occluding surfaces, then the entire coronal surface should be removed and the margins carried out into the axial surfaces far enough down to make room for porcelain thick enough to stand. This formation can be modified in molars somewhat, in favorable cases, by secreting the margins near the fissures where they are to be protected by surrounding cusps and prominences. In bicuspids, the margins that naturally fall near cusp points are unsafe, but less so if the entire cusp point is replaced by porcelain of considerable depth, thus placing the margin on the descending slope, which gives the filling at that point a strong marginal corner.

Proximo-occlusal cavities in bicuspids and molars, owing to the fact that the filling must be inserted from the top and in one piece, demand considerable broadening at that point, not necessary in preparation for gold.

Matters of cavity preparation for this material are by some considered unimportant, but a careful, unbiased study of the subject will show that as a mechanical problem it is good practice as a guide to prove the filling accurately seated when cementing to place. Retention grooves are also decried, but when it is remembered that the greater cement surface there is in proportion to the size of the filling, it will be seen that their adoption will increase the cement area and retention, and this is not taking into consideration the possibilities of interlocking the grooves and prominences.

The object in calling attention to the porcelain bodies on the market is to bring out their shortcomings, and if possible select that which is_necessary to produce the best filling. The successful construction of porcelain inlays depends materially upon the physical properties of the material at hand, such as density, edge strength, fusing point, translucency and shrinkage.

There is none on the market that excels in all these. All are being used, however, and perhaps all have merit, but none are equal to what they could be if the manufacturers, with perhaps two exceptions, would note our needs.

True fusion means the point at which porcelain attains its greatest density or strength. The outfits that arrive at this point before they glaze should have a low fusing enamel color to fuse over them as they glaze. Those bodies that come to full glaze before they come to greatest density are entirely unfit for inlay work at all by themselves, because they lose form in fusing, and being fused clear through, shrink to a common centre, distorting still further. Either of the above will not produce true to life.

The true method of making these restorations has often been described, but may stand repeating. The plan referred to is to use quite high fusing bodies that do not glaze well at greatest strength to give form and outline, and is not to be refused at subsequent bakings. On to and over this fuse lower fusing bodies in layers for shade, thus going one step further without losing form or distorting matrix. Over this fuse still lower fusing enamel colored body for the translucent glaze. There are two outfits on the market based on this plan. All of the others manufactured are of one fusing point throughout, and are therefore a stumbling block to progress for all concerned. And unless a dentist in this work can be satisfied with the outfits that embody the plan mentioned, he is compelled to use a portion of two or more outfits to arrive at the same conclusion.

For instance, for the form or foundation bodies, use Close's high-fusing yellow and white; for the colors use any of the high-fusing inlay outfits, *i.e.*, White's Consolidated or Brewster's enamel colors; and for the glaze, use any lower fusing body that is like tooth enamel, as Brewster's XX. This will produce fillings that are true to form, shade and fit.

Matching Shades.

Owing to the physical difference between our porcelains and the human tooth, the possibility of absolutely reproducing lost parts is remote. No man, be he ever so expert, even with the exercise of the most scrupulous care, can exactly and certainly duplicate any lost part. The result may be good, but all that he can be sure of is a close approximation in shade, and this is best secured in beginning by reproducing the several parts of the reproduction in their order, starting at the base or dentine first, over which lay thin layers of pronounced enamel shades and last, a normal thickness of true enamel colored body.

The limitation, therefore, of porcelain is not governed by the ability of the operator entirely, but rather by the resistive properties of the material itself, combined with the uncertainties of the cements, which gives it a distinct field.

In all large cavities not exposed to occluding stress, considering all its virtues, it is superior to gold. In occluding cavities in the anterior teeth its natural appearance is of such great importance that it alone is sufficient to warrant its use in nearly all cases. In proximo-occlusal cavities in bicuspids and molars within the line of vision, it may be used in favorable cases, provided all concerned understand its frailties.

In all large occluding cavities beyond the lines of vision, gold with its great edge strength, in the form of inlays, is logically correct, to the entire exclusion of porcelain; and in connection with this it should be stated that proximo-occlusal cavities within the lines of vision, that have exceedingly frail buccal enamel, can be successfully filled with gold inlays by first reinforcing it with cement and allowing the filling to protect the edges. In this way it is possible to securely fill very many badly decayed posterior teeth with gold inlays, without allowing the metal to appear on the buccal surfaces to the extent that would be thought necessary for gold foil fillings.—*The Dental Review.*

Discussion.

Dr. W. H. Taggart.—Dr. Thompson has entered into so many details of the process of filling teeth with porcelain, that it would be almost impossible to pick them all out and refer to them. He has contributed a very excellent paper, and the fact that we have such a large attendance this evening is an indication that porcelain is a practical subject and one which attracts the attention of dentists of the present day. In saying this, I do not wish to cast any reflections on our Programme Committee; but if the members of the committee will read the signs of the times as they have appeared during the last year, and in previous years, they will find that such subjects as this that are thoroughly practical will draw large audiences, and that subjects of the more theoretical kind, or those tending toward the medical side of dentistry, are not the ones that will draw large audiences. Dentists are thoroughly interested in this broad and better side of it, and the progress dentistry has made in the last forty or fifty years, or during its life, has come very largely from the practical and mechanical side of it. There is no part of dentistry which it seems to me is going to fill such a thoroughly satisfactory and artistic part of it as the restoration of teeth with porcelain.

Dr. Thompson has been rather conservative, possibly more so in his paper than he is sometimes in his practice. In other words, I think during the middle part of his paper there were allusions made to the frailty of corners in central and lateral incisors. This might make a great many believe that these were not the places for porcelain; that it was too frail for such places. But toward the latter part of his paper he stated that they were almost ideal places for the use of porcelain. I do not feel as if there are many limitations to the use of porcelain in the anterior part of the mouth, and the chipping of the enamel and of the porcelain are not features, to my mind, which ought to interfere with our using it. I find the more skill I acquire in the preparation of cavities, and the more skilful I become in making the restoration to fit in the cavity, the less trouble I have with chipping. All must have a certain amount of experience, and we learn almost intuitively what part of the corner to leave, what part of the enamel to allow to remain, and the fact is that as our skill increases, we are able to make restorations that look well, that allow us to cut more freely than we would do if we were putting in gold fillings. We cut so freely that what would be the weak part, if allowed to remain, that is, the corner or frail edge, becomes the strong point because we have been allowed to cut freely as we would not be allowed to do in case we were inserting a gold filling. The fact that we can cut freely and give good, firm, square margins to the enamel will make up for the lack of bevel which we have to use in gold work. When these margins are square and the restoration well fitted to the cavity, it is set there with great strength. Since I have become more skilful in the manipulation of porcelain, I find chipping is really a secondary consideration, and it does not affect my idea as to whether a tooth shall have a porcelain filling or a gold one. In fact, it never enters into consideration.

Dr. Thompson does not advocate porcelain fillings on the grinding surfaces of molars. There are a great many grinding surfaces in lower molars in particular, where either an amalgam or gold filling would be quite as conspicuous as a gold crown would be. In a gold crown you really only see the grinding surface of it. Deep cavities that take in the grinding surfaces of lower molars have got bulk of porcelain in them, and the margins can be prepared in such a way that there is no lack of strength to them. I saw a filling that was put in such a cavity as that three and a half years ago.

I had the privilege of reading Dr. Thompson's paper last night. He spoke of one factor, namely, of examining the filling under a magnifying glass, which I had not done on molars before. I have always done it with centrals. I took particular pains when the patient came in with that filling to-day to examine it under a magnifying glass and I did not see the chipping that Dr. Thompson referred to. It gave me renewed courage, and I felt as if that there was one of the places where a porcelain filling was thoroughly applicable. Let us take such cavities as I have heretofore crowned, where the restoration with metal would have been unsightly, and possibly the pulp is alive in the tooth, and maybe one-quarter or three-quarters of the tooth needs a filling, but the neck of the tooth and gum are healthy, and all conditions are perfectly normal around the neck of the tooth. Such teeth as that I used to cut off and crown. Now, I restore them with porcelain, bringing them up to full occlusion. In those cases porcelain in large bulky pieces protects the margins, and I have quite a number of them that I formerly would have been compelled to crown. Take the pitted teeth, the lower first permanent molars, pitted from any of the eruptive diseases during the formative period—such fillings as those are oftentimes lacking in occlusion. They look as if they should have grown up another eighth of an inch. Such cavities are ideal ones to fill on the grinding surface with porcelain. The mouth and surrounding tissues take more kindly to porcelain than any other material that can be used.

In alluding to the different porcelains, I have never liked the word body, as it does not amount to much. As to the different kind of porcelains on the market, I think it is well for the dentist to take hold and work all of them. I have ever since I began to do porcelain work, and I have been practically what you might say a high fusing porcelain man, to make a distinction between that and a low fusing man. I must say, gentlemen, that there are possibilities in a low fusing body, as represented, say, by Dr. Jenkins' outfit, which we must not ignore. In the larger restorations I have been using a high fusing body, for the reason that I wanted my lines to stand up good and bold; whereas the lower fusing porcelains are apt to squat down under heat. We do not know how to handle properly low fusing porcelains as yet. Within the last six months I have been using the Jenkins' low fusing body for these restorations, and I find what I formerly thought were objections to the Jenkins' low fusing body are not objections at all, but it was only a lack of ability on my part to handle the material. Take, for instance, in a low fusing porcelain, where you want restoration, by attenuating the point, bringing it out to an exaggerated degree when the heat comes on it, fusing it, that attenuated point settles, and when you have got the right bake on it, it stands out prominently as a cusp. So I have to take back some of the things I have previously said about low fusing porcelains. I do not mean by what I have said that I have gone back on high fusing porcelain, because there are certain restorations to be made in which it seems we cannot get along without a high fusing porcelain. I wish there were forty or fifty more shades and kinds of porcelain to use. All of them have their merits. However, there is a decided advantage in using lower fusing porcelains in the smaller cavities. The Jenkins' porcelain has physical properties according to the manner you manipulate it, and those physical properties make it better suited for smaller cavities, than the higher fusing porcelain. As an illustration, let us take the high fusing porcelains; they do not work well with alcohol, but Jenkins' porcelain does. It seems to me, it is just the vehicle to carry and handle it properly, and Jenkins' porcelain does certainly squat down (I cannot find a better expression to use), and it is that one feature which low fusing porcelain possesses that is the strong point.

Another point: When we are beginning the use of porcelain, we must not allow it to come in competition as regards price with gold fillings. When one becomes expert in the use of porcelain, there are lots of cavities one can fill with it, especially the larger restorations, much more quickly than with gold. But in the cavities in the front part of the mouth the question of dollars and cents ought not to be considered or interfere with our work, because you want the proper color, and make everything absolutely satisfactory. One porcelain filling may be all right, but there are times when you may have to make two of them, sometimes three of them, before you get one that satisfies you, and I should say that if you are satisfied with the first one you make, you will never be a good porcelain worker. Try and get a good enough fee to justify any mistake that you might make. Take, for instance, a fee of $15.00 for a porcelain filling or inlay; you might be able to put in a gold filling or inlay for $10.00. Let us suppose you make a porcelain inlay and the color is away off, you are justified in condemning it; you are wasting time, but all of that time ought not to be charged up to the patient, because you are acquiring knowledge and skill by so doing in that particular line of business. Do not take hold of porcelain work with the idea of making more money out of it until several years' time has elapsed; learn to use it right, then you will be able to look your patient square in the face and charge him a good fee for your work, and if you do not have to make a second one, you can charge it up to your skill.

Dr. W. T. Reeves.—I had the pleasure of reading Dr. Thompson's paper, and I want to congratulate him on presenting a conservative view in such a complete manner as he has. There are many features in the paper that I take exception to, and I have made a memorandum of possibly more things than I will have time to refer to. The essayist said: "Porcelain has passed the zenith of general attention, and settled in its place as one of the best filling materials for certain cases." In regard to porcelain before the dental profession, it occupies a position different from any other material that has ever been introduced to the people by the profession. There have been a great many things brought out as regards different methods, etc., that have depended upon dentists for their advocacy. Take it to-day in crown and bridge-work, while the majority of dentists, who are doing crown and bridge-work, consider it best, to-day you can go into any office and if a dentist desires to recommend a Richmond crown, the patient takes it. But with porcelain for a filling material, we have a different condition. Up to the present time it has depended largely for its introduction on dentists, and has been advocated by them; but to-day the laity are finding out the advantages and desirability of having porcelain for fillings for their teeth, and they are demanding it of their dentists. They are not satisfied with being put off, consequently it is the people to-day who are forcing dentists to take up the work. I think porcelain is going on to still greater usefulness through being forced on to the dentists by the people.

The essayist spoke of estimates and comparisons, and that any filling to be called a so-called permanent one should stand at least ten years. We have been putting in porcelain for ten years or thereabouts. My first porcelain filling was put in eleven years ago last month. At that time the material was indifferent. We have better materials to-day to work with than we had then. In one sense the essayist speaks advisedly as regards comparisons. We are safe in making comparisons and drawing conclusions from the results that have been shown in the mouths of people, and particularly the young in whom gold fillings failed in one, two and three years, and porcelain fillings are standing and preserving the teeth perfectly. If in the comparisons of that kind which we make we find that the use of porcelain is an advantage, I think the same condition will obtain in those cases that are less susceptible to caries and destruction of their teeth. If porcelain is doing well in that class of cases, it will do equally as well and better in the nature of permanent filling.

I take exception to the doctor's statement that the porcelain enthusiasts, as a rule, are those whose gold fillings are failing, and for that reason they are enthusiasts because porcelain fillings are doing better service. I myself would not be afraid to let any of you see the gold work I have done in the past, and I could name plenty of dentists in this town and in other places who stand high as gold operators, yet who are now enthusiastic porcelain workers.

He speaks advisedly in regard to the beginner devoting an equal amount of time to the mastering of the use of porcelain that he did with gold, and if he does so he will become an equally successful operator with porcelain as with gold. I think he will save more teeth for his patients when he becomes equally skilled in the use of porcelain as he has become in the use of gold. He referred to the four qualities of porcelain which make it superior to the use of gold as a filling material—the appearance, thermal change, the glaze, and ease of insertion, all of which is very true. In the paper there was something said about cavities that came from chemical erosion, but I do not recall hearing that part of the paper read, although it may have been. He said that porcelain was not indicated in such cavities, on account of the necessity of extending them beyond where the action of the acid would affect the teeth. If you put gold into such cavities, you are going to have recurrent decay much more readily and quickly than if such cavities were filled with porcelain. In this connection I want to give to the Society a little method that I first heard of at Ann Arbor when I was recently there, which Dr. Runyon, of South Haven, presented. It is a method of obtunding for excavating and preparing the anterior teeth. It was used by a rhinologist when he sat in Dr. Runyon's chair for an operation. The doctor was surprised at the operation being performed without any apparent sense of pain to the patient, and he afterward asked what it was. It seems to be an easy and safe way to employ cocaine. I have used it forty or fifty times since then, with complete success, and in connection with erosion cavities one can obtund the teeth so that he can extend the cavities beyond the action of the acid by this means. The method is this: You saturate a pledget of cotton with a 5 per cent. solution of cocaine, and introduce it into the nostril upon the side on which you are going to operate. It will obtund the three anterior or superior teeth, so that you can prepare these cavities without causing any pain to the patient. The removal of the pledget of cotton from the nostril will bring about a return of sensation to the cavity inside of sixty minutes, and its replacement will obtund in the same length of time. I have found it effective, and I am very glad to have the opportunity to spread this information to those of you who desire to employ some means of that kind.

The main point of the doctor's paper seems to have reference to the edge strength of the material. As Dr. Taggart has said, and I agree with him, I am not bothered in that way. I think it comes largely from the preparation of cavities. All margins, in all localities, should be prepared so that the joint of the inlay is made on the principle of a lap joint. When a cavity is prepared in this way, and the inlay is made to fit, you will have a good joint. You will have very little washing out of cement and very little danger of chipping. A butt-ended joint will give you one that will have at least twice the amount of joint that a lap joint will give you. Margins in bicuspids and molars can all be prepared so that you can get a lap-ended joint in the inlay fitting to your tooth. When we have inlays in molars and bicuspids that have been in position for five, seven, eight years, and longer, preserving these teeth perfectly, with no recurrent decay at any point in connection with them, I think it is going a little too far to say that it becomes necessary to take a magnifying glass in order to find out whether you have any chippings of the margins or not. If to the eye these fillings are standing, and above all preserving the teeth, I believe we have in modern porcelain the best material with which to restore extensive cavities in bicuspids and molars.

Dr. F. E. Roach.—I have nothing but words of the greatest praise for Dr. Thompson's presentation of this subject. I certainly agree with him in his conservative stand in regard to the use of porcelain as a filling material. There is the one great danger in the use of this material of becoming over-enthusiastic and stepping beyond its limitations, going too far in its use, and that to my mind is a danger that we should try to avoid. It is, indeed, a very fascinating part of our work when we become interested in it. The fact that we can approximate the restoration of the lost part of the tooth, that we can approximate the appearance of the tooth, and our patient go away well pleased with its beautiful and artistic effect, and that it can be done so easily as regards the physical exertion it requires, is a source of great satisfaction. It is a fascinating material to use, and for that reason we are liable to go beyond the limitations and use porcelain where we had better use some other filling material. I hardly know just what part of Dr. Thompson's paper to discuss, for he has covered the subject in such a broad way, and, while not entering into it in detail, I believe there are many points that can be brought out to great advantage, of which he has said nothing, only touching in high places, you might say. Personally, I believe there is a great field for good work in regard to cavity preparation for porcelain inlay work. At present the profession are at sea as to the form of cavity preparation. The fundamental principle of the successful use of porcelain is proper cavity preparation, yet very little has been done along the line of formulating and classifying cavity preparation for porcelain inlays. The general teaching has been that we must prepare our cavity with diverging walls, without under-cuts, and sharply defined margins, etc., and too little attention has been placed upon anchorage. I am a little radical in regard to anchorage for inlays. I do not have the faith that some operators have who depend on the adhesion of cement for the retention of inlays. I want some means of retention supplementing that of cement adhesion. It is my belief that this phase of the subject has not received due consideration.

I fully agree with the point that Dr. Reeves has brought out in regard to making a lap joint. This applies particularly to cavities in molars and bicuspids. I think it is almost imperative if we expect to retain these frail margins of porcelain that Dr. Thompson has cautioned us about. That is the weak point in porcelain inlays in molars and bicuspids, especially—frail margins. The cavity should be so shaped in molars and bicuspids that the finished inlay will present obtuse rather than acute angles on occluding surfaces. And if you have a square butt-end joint, such as Dr. Reeves illustrated, you will have that chipping to a limited extent in almost every case, but if you make a lap joint, such as Dr. Reeves has recommended, and has illustrated on the blackboard, chipping would be largely obviated.

Dr. J. N. Crouse.—I want to say a few words in regard to porcelain as a filling material. I have no doubt that porcelain inlays have greater possibilities than I think they have at present. Dr. Taggart, whom I regard as one of our most skilful dentists, did not tell us how to do it. I want him to describe his method minutely. Of course, when one has acquired the necessary skill to do these things, he can do it, but what we want is a demonstration of how to do it. We want to see how it is done, otherwise such a discussion as we have had to-night does not amount to much. We are here to find out how this thing is done. Take a tooth with possibly one-half or three-quarters of its surface gone, how to bake porcelain in there and get a perfect fit is more than I can do. If these experts in porcelain can tell me how, I would be very much obliged to them. I want them to tell me how to get rid of shrinkage, which is such a large element in big fillings, and I think so much shrinkage in big fillings is one of the great factors of failure in the use of porcelain as a filling material.

Dr. Taggart.—Do you mean warpage?

Dr. Crouse.—No; I mean shrinkage. It is said that porcelain in a tooth mould shrinks about one-third, consequently the mould is made that much larger than the tooth will be after it is baked. That is what I mean. In order to determine whether I was wrong or not, I have taken a big cavity and attempted to put in a porcelain inlay, but there was a large amount of cement around the edges when I came to fit it in. I don't pretend to know. I have an old molar tooth I picked out of one of my drawers that had a porcelain filling in it, which was put in twenty years ago, but the tooth came out on account of pyorrhea. I used porcelain because the tooth was loose rather than a gold or amalgam filling. I think gold inlays have a greater field in some cases than porcelain. Dr. Reeves said something about decay occurring about gold fillings, but that as soon as he used porcelain the decay stopped. Let me give another illustration: I have in my mouth four or five cavities that have been there for twenty years or more; they have never been filled, as I could not get any filling material that would save the teeth. Now, you might just as well turn around and advocate open cavities. It is just as logical in my opinion as what the gentleman has said. I am glad Dr. Thompson read this paper. I consider it conservative; it is correct in its logic, and a good guide for the young men to go by.

Dr. E. J. Perry.—I have a practical suggestion to make. Dr. Crouse wants to know how to make a big inlay fit, and I thought I would tell him. I have made a great many inlays that do not fit. I know how good it is to tell the truth sometimes, and I think it is a good thing in a discussion to do it. So I will acknowledge to you I have made a great many inlays that do not fit. Some of my professional friends have said they have no trouble in fitting inlays. I always look at them when they say it. This material shrinks and there is trouble about the fit of the inlay, and you cannot deny it. Some time ago I made an inlay that did not fit. It suited me as to color, and I took the platinum off of it, and I made another one. I made a new matrix in the cavity, carefully burnished it in, and I filled the cavity with the mixture of Mr. Brewster's enamel. He calls it colorless, and I settled the misfitting inlay into it very carefully, being careful to absorb all surplus moisture. The point of that was, shrinkage had all been baked out of the original inlay, and the result was the most perfect fitting inlay I have ever made. I simply offer that as a suggestion. You know there are enamel or porcelain rods that are furnished to be used in large inlays, for the reason that shrinkage has been baked out of them, so that in baking the inlay you will not have as much body of new porcelain to shrink. If you have such trouble, and some of the common people do, just make your inlay a second time; make the inlay and make a new matrix, settle the inlay into it, and you will have as a result a good fitting inlay. I want to say, before sitting down, that it is a very amusing discussion to me to see these extremists get up and talk. The truth does not hurt anybody, and the truth is, there is an inherent quality in porcelain, and that is, its lack of edge strength, and it will not stand upon the grinding surfaces of molars and bicuspids, wherever the stress is great, and you may talk until your hair drags on the ground, and you cannot change the facts. That is what I like about Dr. Thompson's paper. He puts material in teeth which has edge strength, namely, a gold inlay.

Dr. W. V. B. Ames.—I have enjoyed Dr. Thompson's paper very much indeed, and I think that the confidence he expressed will convey the idea to any of us that he can make a porcelain inlay or a large restoration which will practically fit a cavity, and those who have followed this question of porcelain have become satisfied that while it is easy to make a misfit, it is also possible to make a well fitting large restoration, and with cement adhering as it will to a surface of dentine and by treating the reverse surface of the inlay for adhesion of cement in a way I want to describe, there ought to be a highly successful outcome. I feel that I have dug out a little matter recently which will be of interest to those present because they are interested in this inlay question. It is nothing more than a means of enabling you to get a stronger attachment of cement to the porcelain surface. I do not feel that I can let the opportunity pass without mentioning it. Taking three parts of porcelain (whatever you are using, whether it be high or low fusing) to two parts of cement powder, supposedly zinc oxide, and preferably not too fine; make a mixture; wet this as you would porcelain; paint the merest film possible in the bottom of the matrix, absorb the surplus moisture, which will enable you to place plain porcelain without disturbing this layer, fill the matrix, and complete the inlay, as if the porcelain and zinc oxide mixture were not present. On stripping off the matrix you will have a slightly opaque layer, which is silicate of zinc, with zinc oxid in excess, simply held in the texture of that material. In addition to a chemical attachment this silicate of zinc in its formation will become slightly porous, giving you a mechanical anchorage something analogous to that from etching by hydrofluoric acid. I have a small specimen showing what this mere film is. You can scarcely see the opaque layer on the piece of porcelain, and the cement is adhering to it very tenaciously. If an inlay has been completed and it is desirable to give it such a surface, take just such a mixture of a lower fusing porcelain and zinc oxid, and bake upon such surface as would be indicated, compensating, of course, in some way for the thickness of this layer.

Dr. J. G. Reid.—I did not hear the paper, as I was out of the hall at the time it was being read. I would simply criticize one thing I have heard in the discussion, and that is, we will find experts in any line of work who cannot draw anything on a blackboard that is fit to look at. To make things interesting before a body of men like this, the men who are designated to discuss these questions should come here prepared with models and preparations, and show distinctly to each and all of us how they do this work. Then we can learn something. Those of us who have to sit and listen expect to learn something about porcelain inlays. I believe this to be a part of the business of those who read papers and discuss them. This large audience here to-night has come to learn something about porcelain inlays, how to put them in, but there has been nothing to show how it is done. I am criticizing that feature of the work because I am interested in porcelain.

C. N. THOMPSON (closing the discussion).—I feel satisfied that I have yet much to learn about porcelain and its manipulation. The future may have much in store for us, but I believe it is possible to err in its use as much as in the use of other materials and have aimed to keep on the safe side, away from the danger line as shown by failing margins on masticating surfaces. Owing to the adhesive setting of these fillings frail enamel can and should be retained far beyond the point thought safe for gold, and particularly frail incisal corners resulting from extensive proximal cavities, because the main feature in all cavity formation for porcelain is to prevent the extension of the cavity outline into localities that are exposed to either incisal or occlusal wear. Therefore incisal corners even though frail, if sound, present an unbroken incisal edge, the margins of the filling being proximal and subject only to disintegrating influences. and cement supported corners seldom fracture. Relative to cavo-incisal enamel formation the strongest presentation is to concave the pulpal wall slightly from incisal edge down to the dentin. Extensive cavities in molars and bicuspids such as a mesio-occlusal distal, where the whole coronal surface is to be restored, are cases where porcelain is indicated. If appearance is considered a factor, however, gold inlays will last longer in such cavities. With regard to what was said relative to the shrinkage of porcelain, I desire to say that it is one of the prime factors in most misfits to illustrate: bake a small amount of porcelain onto a perfectly flat piece of inlay platinum and note the manner in which the shrinkage has drawn the platinum out of line. In large cavities shrinkage may be taken care of partially by dividing the carved porcelain filling before baking, and using lower fusing bodies as the filling progresses, but the surest way to secure good marginal fit is to burnish to the cavity after each fuse in the furnace.—*The Dental Review.*

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EDITOR:

A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.

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St. John

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FRANK WOODBURY, D.D.S., L.D.S.
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Victoria.

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Brandon.

NORTH-WEST TERRITORIES

W. D. COWAN, L.D.S.
Regina.

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J. S. BAGNALL, D.D.S.
Charlottetown.

NEW YORK

G. LENOX CURTIS, M.D.
7 West 58th Street, New York City.

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VOL. XVI. TORONTO, SEPTEMBER, 1904. No. 9.

CANADA'S GREATEST DENTAL MEETING.

Every dentist in Canada will feel the benefits of the recent meeting of the Canadian Dental Association. Without any blowing of trumpets, tall speeches, or prophecies, work was done which other countries have spent years without accomplishing.

WHAT THE CANADIAN DENTAL ASSOCIATION HAS DONE.

When the history of Canadian dentistry is written the organization of the Canadian Dental Association will stand out as one of the landmarks of progress in Canada and the world. A broad and a more national and international spirit has been breathed into the profession. Not more than five years ago there were not twenty dentists in the whole Dominion who could believe that a national association could be organized, much less a National Dental Council, which would grant licenses for all the Dominion. How many, even five years ago, thought or cared whether we were represented on the International Dental Councils of the World or not? In 1900; yes, even in 1901, men who pressed our right for representation abroad were treated with a smile when the matter was mentioned in local societies. To-day we are represented on all international dental councils and the profession is justly proud. We as a profession are doing our part to build up a nation and demanding national recognition. At the recent meeting of the Association we were honored by the presence of Dr. Charles Godon, Paris, France, the President of the International Dental Federation, who by his influence has caused five representatives from Canada to be accepted to represent us in that body. Only two years after the organization of the Association dentists have been appointed to the army, having the highest rank given to non-combatants. If such things have been accomplished in two or three years since the organization of the Association, we may look for greater things in the future. Those who have had the honor of assisting in its organization should feel proud. It is their duty not only to maintain the Association in its high position, but also to guard against the introduction of self-seekers who always bring ruin to any association. There is no room for either politics or politicians in Canadian dentistry; and now while we are free from such barnacles let us remain so.

DENTAL APPOINTMENTS TO THE CANADIAN MILITIA.

The report of the Chairman of the Committee *re* Army Dental Corps was very satisfactory. Since the appointment of this Committee in Montreal two years ago its chairman and his associates have worked carefully, and with good judgment. The Government, the Minister of Militia, the Commander-in-Chief, and the head of the Army Medical Service, were met on several occasions until an agreement was reached upon what basis the Committee would accept the organization. The dentists will be part of the Army Medical Service Corps, with the same rank and pay as the surgeons, beginning as lieutenant, and at the end of five years captaincy. The dentist is an integral part of the army, under no special contract, having the same rank by right as other officers. The appointments will be made by the Militia Department.

Besides having a license to practise and other qualifications, the applicant must present a recommendation from a dental society. In this way the unethical man cannot receive an appointment. Under this clause it is hoped that dental societies will realize the responsibility placed upon them. It may be said that the efficiency and standing of the Army Dental Service rests with the societies. Only those having the very best qualifications for such an office should be recommended. The profession is raised or lowered before the army officers and the public by the standing of the men appointed. Let us repeat, "Dental societies have the standing of our profession in their power." Though the details are not all made public yet sufficient has been published to place the organization far in advance of anything yet attained in any other country. The rank and prominence in the service are above that of any similar service in existence. The profession owes the Central Committee, and especially Dr. Bower, its chairman, a deep debt of gratitude for so successfully piloting such a bill through the House. As soon as the details are completed they will be made public.

COMPLIMENT TO THE ESSAYISTS AT THE CANADIAN DENTAL ASSOCIATION.

Generally at dental meetings the exhibits must be closed so that the members will attend the sessions, but the contrary was the case at the Canadian Dental Association meeting. Special notices had to be put up in the lecture-room calling attention to the exhibits. The president had to call attention to the exhibits repeatedly to induce the members to visit them. Certainly the programme was attractive.

CANADIAN DENTAL COLLEGES THE ONLY ONES WHO COMPLY WITH THE REQUIREMENTS OF THE DENTAL EXAMINERS ASSOCIATION.

In St. Louis July 18th, 1904, twenty-nine representatives of dental schools of the United States and Canada met and called themselves the National Dental Faculties Association. They passed resolutions repealing all the by-laws of the Association which might interfere with what they wished to do. Then they said that the dental course hereafter should be only three years In St. Louis August 27th, 1904, the National Dental Examiners Association passed resolutions to the effect that they would not examine a candidate for a license to practise unless he had a four years' college course, and, still more, after 1905 he must have passed the third year in high school before he entered upon his dental education. There is surely going to be a conflict, because there is not a single school left in the United States with a four years' course. Those who opposed the change, and have been teaching a four years' course for three years, have weakened, and gone back to three years. The only schools in America that are complying with the requirements demanded by the National Dental Examiners Association, as to both time and preliminary requirements, are those in Canada.

TO INTENDING DENTAL STUDENTS.

Since the close of the last Dental College session, many new and important changes have occurred in dental circles in America. These are of especial interest to dental students. At the Faculties Association meeting in Washington the length of session was reduced to six months in each of four years. At another meeting of this body at St. Louis, the sessions were lengthened to eight months, but reduced to three years. Still a little later, the National Examiners Association passed resolutions which say they will not admit to examination any one who has not taken a four years' course. And, also, the matriculation will be raised to three years in high school, or its equivalent. So much for United States. In Canada the course will continue to be four years, and matriculation in the faculty of Arts the standard to commence. A Canadian Dental Council has been organized, which will grant a certificate to only those who are graduates of Canadian schools. This certificate will permit the holder to obtain a license in any part of Canada without further examination, to take effect January, 1905. With these facts before him what should the Canadian student do if he wishes to practise in Canada, and have the whole Dominion as his field to make a choice of location. Is it conceivable that he would go to a foreign country where the degree he might obtain would not, at the present time, admit him to examination in many of the states in the Union; nor would it admit him to examination by the Canadian Dental Council? The proper course to take is to matriculate in any Canadian university, begin as a dental student with a Canadian preceptor, and enter a Canadian college. Any student who cannot comply with the matriculation requirements for Canada may matriculate in the United States and obtain his dental education in Canada.

Editorial Notes

DR. WILLIAM MCPHEE, Ottawa, was killed in an elevator.

DR. MORLEY BRADDEN, graduate R. C. D. S. 1904, died in London early in July of appendicitis.

SUPPLEMENTAL examinations of the Royal College of Dental Surgeons of Ontario begin 9 a.m., October 1st, 1904. Regular lectures begin 5 p.m., October 3th, 1904.

A BIENNIAL election of the Board of Directors of the R. C. D. S. will be held this December. No elector can vote unless his fees are paid by November 1st. J. Frank Adams, College Street, Toronto, Treasurer.

IN days to come, over 300 members of the Canadian Dental Association will be proud to say that they attended the meeting in Toronto 1904, when the Provincial Dental Council reported the formation of the Canadian Dental Council.

OWING to delay in getting the report of the Canadian Dental Association meetings, this issue has been mailed very late. It was thought desirable to have that part of the proceedings pertaining to the formation of the Dominion Dental Council in this issue, even if a week or two late.

Obituary

ALFRED CHIPMAN COGSWELL, D.D.S.

Alfred Chipman Cogswell was born in Upper Dyke village, Cornwallis, N.S., July 17th, 1834; entered Acadia College, Wolfville, N.S., at the age of fifteen years, but after two years he was compelled to abandon study on account of ill health. The next two years were spent with great benefit on his father's farm in the suburbs of Portland, Me. He then entered upon the study of dentistry in the office of Dr. Edwin Parson, of that city. After four years of study and practice in Portland, Me., and Boston, Mass., Dr. Cogswell opened an office in Wakefield, Mass. He soon acquired a high standing and reputation for skill in his profession, and in 1859 removed to Halifax, N.S., and formed a partnership with Dr. Laurence E. Van Buskirk, a successful practitioner in that city. After two years Dr. Van Buskirk retired. Dr. Cogswell, in 1867, formed a partnership with J. L. MacKay, which continued for ten years, when Dr. Cogswell went to Philadelphia, and was in attendance at the Philadelphia Dental College until he received his degree of D.D.S., when he returned to Halifax where he has since practised until quite recently. Dr. Cogswell took a keen interest in all matters relative to his profession. Some thirty years ago he agitated the formation of a dental society for the mutual instruction and protection of practitioners throughout the Province of Nova Scotia, but owing to lack of interest, and particularly to adverse influence in the Legislature the Society did not materialize. In 1892 a dental society was successfully formed, and Dr. Cogswell was elected President, and continued to hold that office until 1903. Dr. Cogswell was universally loved and esteemed by all who knew him, and in both his professional and business engagements acquired a reputation for honesty inasmuch as his "word could be accepted in lieu of his bond." His genial open-hearted manner never failed to make him friends whilst his honesty of purpose always cemented friendship, and in losing him Halifax has lost one of her landmarks.

Dominion Dental Journal

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Original Communications

PRESIDENT'S ADDRESS.

By J. B. Willmott, Toronto.

Delivered before the Canadian Dental Association.

In rising to contribute the second item of the programme, I assume, from the number of papers to be offered, and especially from the work prescribed for this evening, that the President's address was intended to be very brief. I may add, that as I have no very special matter, either subjective or objective, to present to the Association, it will probably be sufficiently varied, even if somewhat diffusive.

As President of the Association, I extend a very hearty welcome to the members on the occasion of their first meeting in Toronto. The Executive Committee has endeavored to provide a programme which, in the papers which will be read, the clinics which will be given and the extensive exhibit which will be made, will fully interest every member. Through the courtesy of the University authorities, we are privileged to meet in this beautiful and commodious building, and I trust every one present will acquaint himself with the excellent facilities which, with its scientific equipment, utilized by a staff of eighty-seven of the most skilful and progressive physicians and surgeons of the city, it provides for the study of medicine. I may safely say that these are not surpassed by any on the continent, and equalled by few. So far as time may permit, I hope every member will endeavor to get, from a visit to the various buildings on the campus, an adequate conception of the advantages which our Provincial University offers to students in every department of art and science. Two years ago we occupied one of the many magnificent buildings which grace the campus of McGill

University, Montreal. I trust that the members will not decide that those of Toronto, or the campus itself, suffers by comparison.

The organization of the Canadian Dental Association marked, to some extent, the time of completion of the preliminary stage in the development of the dental profession in Canada. Provincial and local societies had been formed in every province. For the protection of the public against the injury to the public health which would result from unskilful dental operations, each provincial legislature had passed laws requiring a good degree of professional education and skill. The corporate bodies constituted under these laws had organized the profession and fixed a high standard for admission in the several provinces. Dental schools had been established in Quebec and Ontario, with capacity for the education of the dental students of the Dominion. From small beginnings, the *Dominion Dental Journal* had grown to be a large and influential factor in maintaining and extending the credit of Canadian dentistry. What still was lacking was the bringing together of the results of the good work accomplished in the several provinces and making it effective in the development of dentistry throughout the Dominion. This "missing link" was supplied by the organization of this Association.

This afternoon representatives from the several corporate dental bodies have been in prolonged conference over the problem of a Dominion qualification in dentistry. The progress which was made at the Montreal meeting, and the careful consideration which, in the interim, has been given to this subject, furnish reasonable grounds for expecting that so desirable a consummation will be speedily reached.

In the domain of practical dentistry it is not too much to claim that Canada has kept well abreast of the development in other countries. Practically every operation which has been demonstrated to be of real value in the treatment and preservation of the natural teeth, or the replacement of them when lost, is within the reach of the average dental patient in any part of the Dominion. Dentists have always shown a tendency to run into extremes. Just now porcelain as a material for replacement in the treatment of caries bids fair to be exploited in many cases rather for the pecuniary benefit of the operator than the permanent benefit of the patient. This has undoubtedly been, and still is, the case with bridge work, and it seems to be time for some one to utter a word of caution in the interest of the innocent and unsuspecting patient.

Probably not much more can be done than is being done, in the treatment of the pathological conditions of the teeth. The great and almost untouched field still before the intelligent and progressive dentist is "Prophylaxis." This subject I have not time to discuss, but would direct the earnest attention of those present to the work which is being done in this direction by Dr. D. D. Smith, of Philadelphia, and which is described and sometimes criticized in the periodical literature of the profession.

In the medical world, leaving out pure surgery, almost the whole advance which has been made in two decades has been in the direction of "preventive medicine." It is an evidence of the unselfish character of the medical profession that many of its most distinguished members are spending a large portion of their time and money in devising means to prevent the development of those pathological conditions, for the treatment of which they would naturally expect to receive generous fees. In the judgment of competent dentists, the great mass of the medical profession has not yet grasped the importance of the condition of the oral cavity in its relation to general health. This cavity forms the gateway to the entire body. It has closest relations with both the respiratory and digestive systems. Apart altogether from the value of the teeth and associate parts as a masticatory apparatus, and of relatively greater importance, is the condition of the oral cavity in its relation to the introduction of pathogenic germs into the system. The average human mouth, unless recently cared for by a conscientious dentist, is in every detail an almost perfect incubator for the development of germs. It contains media in the debris of food. It always contains infectious germs. It furnishes the proper temperature and moisture. In the recesses of carious teeth and unmolested interdental spaces, the necessary quiescence is secured. Micro-organisms of many kinds, several of them pus-producing, are rapidly multiplied. These, with their by-products and ptomains, not only act as local irritants, inducing, under favorable conditions, gingivitis, stomatitis and other infective conditions, but they are passing in a continuous stream into the stomach, testing to its extreme the ability of the gastric fluids to dispose of them without injury. Not infrequently, these germs, and the pus from abscessed roots and teeth, produce serious gastric disturbances. Many experienced physicians have come to recognize that the conditions to which I have referred are, in part, at least, responsible for those not infrequent and somewhat obscure cases of gradually declining health, with rapidly lessening vitality, presenting many of the symptoms of mild septicemia.

What may be properly designated as a surgically clean mouth is a marvellous factor in the preservation of good health. In these days great attention is given, and properly given, to the water we drink, the air we breathe, the houses in which we live, the people with whom we come in contact, all with the aim of preventing the development of disease. The marvellous thing is that the septic condition of the oral cavity as a cause of local and constitutional disturbances is scarcely touched upon either by the writers on, or teachers of, practical medicine.

In view of the great importance of the oral cavity, from the standpoint of preventive medicine, it is matter for surprise, and, may I be permitted to add, of regret, that in no medical school in Canada has attention been given to this matter by the appointment of a lecturer on the subject. Surely a limited number of lectures by one, who by education and the experience of his daily work was fitted for the position, could not fail to be interesting to the intelligent student of medicine, and might be of great value to their patients in the future.

In many dental circles the subject of dental education has for some months been much discussed. All the members of the Association may not know that about twenty years ago the faculties of the then existing dental colleges formed an association for the purpose of raising the standard of dental education. This is known as the National Association of Dental Faculties, and now includes fifty-three colleges. The Royal College of Dental Surgeons applied for membership in 1887, was admitted in 1889, and still retains its membership. Twenty years ago the curriculum in dentistry required no preliminary standard, and students were graduated after attendance on two courses of instruction of four months each. Year by year the standard of the Association has been raised, until at the meeting in Milwaukee, in 1901, by a unanimous vote, it was decided that, commencing with session of 1903-4, the requirements should be for entrance a certificate of the completion of two years of High School work, or its equivalent, and for graduation, attendance on four courses of instruction of at least seven months each. When the classes were formed in October, 1903, and it was found that on the average the freshman class was less than two-fifths of that of 1902, some school men who were dependent for an income upon dividends from money invested in a dental school, took fright and led an agitation for a reconsideration of the whole matter. This culminated in a special meeting at Buffalo, in December, 1903, at which nothing was done; the regular meeting at Washington, at which a compromise of four courses of six months each was agreed upon; and another special meeting at St. Louis, in July, when the Association retrograded to three courses of seven and a half months. I presume this will be the standard for many years to come. The next advance will be in preliminary training. I am glad to be able to announce that the Canadian schools, the dental department of the Faculty of Medicine at McGill University, and the Royal College of Dental Surgeons of Ontario, in affiliation with the University of Toronto, adhere to the four courses, with an entrance standard the equivalent of four years in a High School.

My time is up. I can only add that I trust every member of the Association will be in attendance at each session promptly at the hour named in the programme, and thus facilitate the business and get benefit for themselves.

REMARKS ON THE RECENT MEETING OF THE CANADIAN DENTAL ASSOCIATION.

By Fred R. Mallory, Toronto.

Read before the Toronto Dental Society.

Mr. President and Members of the Toronto Dental Society,—The second biennial meeting of the Canadian Dental Association seems to have been as great a success as the first meeting. While the second was not as successful in some ways, it was probably slightly ahead in others.

In point of attendance it may have been a little larger than the first, but to my mind not nearly as large as it should have been. When you take into account the population of dentists in Ontario and compare it with Ontario Dental Society meetings, I think the attendance should have been at least one-third more. I would think the fact of its being a national association would increase the attendance. This may arise from the fact of insufficient notice being given of the meeting.

In regard to entertainment, of course it was not up to the standard of the Montreal meeting. Some thought there was too much at Montreal, but too much is not as great an evil as not enough. One writer, in describing the Montreal meeting, said: "While ample time was spent in attendance at scientific sessions and clinics, the occasion was made agreeable and memorable by the character of the entertainments furnished the visitors by the local committee." What would the same writer have to say or think about the entertainments given by the Toronto men? I would think that when the object of the whole Canadian Association was to assist the Canadian Dental Council, this object would be more readily attained by social intercourse than by listening to and discussing papers.

The interest taken in the papers read was not what it should have been. Some may have thought the attendance at lectures was large because the exhibitors complained, but had the meeting not clashed with the National Exhibition I think there would have been a larger attendance to hear the papers read and also to see the exhibits. Another reason, of all the papers read only two were practical to the average practitioner. The others were educational or for the specialists. Papers to be interesting should be such as can be readily discussed by all, not by just a few. The exhibits were without doubt the best we have ever had here, and were one of the attractions of the meetings. I think the exhibitors should be thanked by the Association for making the exhibits a special feature, and so helping to make a success of the meetings of the Canadian Dental Association.

The clinics may have been a decided success, but not nearly what they could have been had they been held in a place adapted to them. The clinics are nearly always one of the special features of any meeting and I think should be very carefully taken care of. As the clinics would make a paper of themselves, I will not attempt to discuss them here. With the good clinics they had, I think a good bright room, with a few members, would have made the clinics a much greater success.

It has always been a question with me. Why was the meeting not held in the College building, instead of the Medical?

I think it is a great mistake. When you have a school, why not try and show it to those that have not graduated from it, and so convince them it is as good as where they went, and see if they will not use their influence, and so help the school?

No matter how much this convention lacked, it was all made up by the report of the Dominion Dental Council. This report as read by Dr. Cowan and explained by Dr. McInnis, was all that could have been desired. When the agreement is completed, I think it will stand as the red letter day in Canadian dentistry.

This report was, without doubt, the feature of the meeting, and I think too much praise cannot be given to the men who formed the Provisional Dental Council. I think a vote of thanks should be given these men, not only by the Canadian Dental Association, but by all the provincial associations.

REMARKS ON THE RECENT MEETING OF THE CANADIAN DENTAL ASSOCIATION.

By Charles G. Scott, Toronto.

Read before the Toronto Dental Society.

Mr. Chairman, Ladies and Gentlemen,—In attending a convention or gathering of any kind, there are always some points brought out which imprint themselves on a person's mind. These may or may not be the most important, but as they may be useful for discussion, or interesting to recall, I shall recite a few points which impressed me during the recent dental convention held in this city.

Dr. Angle's paper on orthodontia was indeed a revelation to me. In his opening remarks he said he rarely extracted a tooth to relieve overcrowding. In fact, so emphatic was he in this particular, that he almost said, in the words of the song, that he "seldom ever, hardly ever, never" extracted. I thought, even in my short experience, that there had been some cases come under my notice, in which extraction was absolutely necessary, but it was not long till Dr. Angle showed case after case such as I had thought of, which he had regulated into normal occlusion without extraction. The speaker's treatment of this part of his subject was so complete and convincing that there was no longer room for doubt. Then again I thought, "But even if it is possible to bring the teeth into normal occlusion, there are cases that, if treated thus (without extracting), would result in making the anterior teeth too prominent, and thus destroy the facial contour." Dr. Angle showed, by means of his very beautiful set of slides, that this belief, which is very general, was without foundation. To take up orthodontia and perform the operation thoroughly takes more time than the general practitioner can devote to it, and I heartily endorse Dr. Angle's closing remarks, that this branch of dentistry must be the work of a specialist. In fact it seems to me that this was the most important thought that the speaker left with us.

I did not have the pleasure of hearing all of Dr. McDonagh's paper on "Instrumentation in Pyorrhea," but his thought that instrumentation is most essential, seems to me to be the key to success, if success is to come at all. Of course, a tooth treated in the way Dr. McDonagh describes, if it tightens up, is not held in the jaw in the same manner that a sound tooth is, but is almost the same as an implanted tooth that has been taken out, scraped, cleaned, disinfected and put back in its socket.

Dr. C. G. Meyer's new instrument for obtunding sensitive dentine seemed to work all right, and in the operator's hand fulfilled all that was claimed for it. Patient presented with upper right second bicuspid aching, but not sore to the touch. There was a large cement filling in the distal occlusal. A very small cavity was drilled on the occluding surface; on reaching the dentine the patient complained of soreness, and the drilling was stopped. The point of the obtunding instrument was next inserted into the cavity, and pressure exerted for about two minutes. The cavity was then deepened, without the least pain to the patient, until the pulp was exposed. The obtundent was again applied, the cavity into the pulp chamber enlarged, and the pulp extracted. The patient said the operation was not at all painful. A tooth treated in the above manner was exhibited filed down. The penetration of the fluid injected into this tooth was plainly marked, extending along the tubuli almost as far as the pulp chamber.

"Use of the Broach in Mesial Roots of Molars," Dr. W. C. Gowan, Creemore. This was a very interesting and instructive clinic. Dr. Gowan showed how to make the broach he uses. A piece of piano wire is placed in a suitable handle and filed down till nearly the required thickness is obtained. Then, to finish with, two sandpaper disks, with the faces toward each other, are placed in a mandrel in the engine. By running the broach between the two disks, the desired thickness can readily be obtained. Dr. Gowan uses this broach, when wound with cotton, for extirpating pulps, and the manner in which he carried out the operation was very thorough. The operator was able to extract the pulps from the small canals in molars with comparatively little trouble, and it was not necessary to go into each canal more than once. In this clinic the thought that impressed me most was thoroughness.

"Matrix for Gold Filling in Anterior Teeth," Dr. George Gow. Having used this matrix for some time, it would be very hard for me to get along without it. In a simple approximal cavity, you can build the whole filling in from the labial surface. Now just think what this means to the operator. (1) You do not have to think about the lingual margin, and consequently do not have to use reflected light, or bend your back till it is tired to watch the lingual margin; (2) you seldom drop a piece of gold; (3) when finished you have a better lingual margin.

The exhibits of the manufacturers and dealers were exceptionally good, and an education to anyone who took the time to examine them. They were interesting for the city dentist, and they must have been doubly so for the practitioner out of town, who has not so frequent an opportunity to visit the depots.

The Medical Building was in many respects an ideal place for the meeting of the Association, but the rooms available for the exhibits and clinics were separated so much that I fear that they did not have their full share of patronage.

In closing I would say that the thought that impressed me most during the whole convention was that thoroughness should characterize every operation we undertake.

CANADIAN DENTAL ASSOCIATION.

(Continued from September issue.)

The President.—I call for the report of the Committee on the Army Dental Corps, of which I think Dr. Bower, of Ottawa, is Chairman. Report read as follows:

Report of Army Dental Corps.

Mr. President and Gentlemen,—Your Committee *re* Army Dental Corps, appointed at the last meeting of this Association, held in Montreal, September, 1902, beg leave to report as follows:

Soon after the meeting steps were taken to elect a sub or central committee of three, together with the Chairman and Secretary of general committees, for which Dr. Ives, of Montreal, kindly consented to act as scrutineer. Dr. Smith, of Cornwall; Dr. Webster, Toronto, and Dr. Stevenson, Montreal, were declared elected. Later on a circular of a proposed scheme was sent to each of the members of the general committee, asking them to make any amendments, rejections or suggestions to same. Upon their return I arranged an interview with the Minister of Militia, and notified your sub-committee, who met in Ottawa. Drs. Smith, Stevenson and Bower responded, and after discussing the circulars returned to us, formulated a scheme which was presented to the Minister, who received us very courteously and, although sympathizing with the movement, positively refused to give us an independent corps. We were very much discouraged, but decided to act on the Minister's suggestion, namely, that as I was a resident of Ottawa I could call on him at any time. This I did privately, and had a long conference; he still refused to grant the independent corps, but suggested that we meet Col. Neilson, D.M.S., and arrange something that would be acceptable to all parties, as it would be the only way we could get recognition. I immediately called the committee together again. Drs. Bower, Smith, Stevenson, McKenna responded, and we met Col. Neilson, D.M.S., and arranged a scheme which was presented to the Minister, Sir F. Borden.

Shortly after this, Col. Neilson retired, and Col. Fiset was appointed D.M.S., and I must say he has been a fast friend to the profession. Our application drifted about a long time, from the Minister to the G.O.C. and to Col. Fiset, then back again, until, finally, I am pleased to inform you, an Order-in-Council was passed and published in the Militia General Orders, July 2nd, 1904, authorizing dental surgeons in the Canadian Militia with the rank of relative lieutenant, and after five years' service, that of captain.

The limit at present will be eighteen officers throughout the Dominion, who will receive the same pay as medical officers holding the same rank, also the uniform will be the same, except, perhaps, the facings may be green with silver mountings and the letters A.D.S.

Although there will not be any appointments made at present, I will mention some of the requirements necessary, viz.; (1) Three years' active practice; (2) certificate of license; (3) moral character; (4) physical fitness; (5) certificate of local Association; (6) age.

I cannot close this report without expressing thanks for the valuable assistance I have received, and especially to the central committee. As you know, there was a great deal of work all over the Dominion, getting our officers elected, and there was a great deal of correspondence, and I feel very thankful for the great assistance I have received. I move that this report be received.

The President.—It strikes me that perhaps the best course for this Association to pursue would be to express their appreciation of the labors of the committee, and the satisfactory results which have been obtained, and to continue the committee with its present officers. Now, there is a motion to receive the report. Is that seconded?

Dr. Abbott.—I second the motion, that the report presented by the Chairman of the Committee on the Army Dental Corps, be received.

The President.—It is moved and seconded that the report of the Committee on the Army Dental Corps be received. Carried.

Dr. McInnis.—I would move that the thanks of this Association be extended to the committee, of which Dr. Bower is Chairman, for the successful manner in which it has managed the affairs in connection with the establishment of the Army Dental Corps, and that the committee be continued in office.

Dr. Frank Adams.—I second the motion that the committee be sincerely thanked for their services in connection with the establishment of an Army Dental Corps, and that the committee be continued with its present officers, so as to prevent the necessity of reorganization. Carried.

Revised Report of Nominating Committee.

President, Eudore Dubeau, Montreal; Vice-President, S. W. McInnis, Brandon; Secretary, C. F. Morrison, Montreal; Treasurer, W. G. L. Spaulding, Toronto; Registrar, G. K. Thompson, Halifax.

Executive Committee: F. W. Ryan, Nova Scotia; F. A. Leflurey, Prince Edward Island; F. A. Stevenson, Quebec; G. E. Hanna, Ontario; W. T. Taylor, Manitoba; W. D. Cowan, North-West Territories; G. W. Oliver, Montreal; E. H. Brown, Montreal; Joseph Nolin, Montreal.

THE PRESIDENT.—Now, does any gentleman desire to make a change in the report?

DR. WOODBURY.—Mr. Chairman, I would like to decline the office to which I have been appointed. I have quite a considerable duty imposed upon me in connection with the Dominion Dental Council, and I would suggest that someone else be appointed in my stead. I move that Dr. Thompson be appointed.

DR. MAGEE.—I second the motion that Dr. Thompson be Registrar in the place of Dr. Woodbury. Carried.

DR. OLIVER.—I wish to decline the position to which I have been appointed. It would be utterly impossible for me to look after the duties of that office in the way it should be. I would like to propose Dr. Morrison's name in substitution for that of my own.

THE PRESIDENT.—Dr. Oliver suggests the name of Dr. Morrison in substitution for that of his own.

DR. GODSOE.—I second that. Carried.

THE PRESIDENT.—These, gentlemen, are the officers nominated by the committee. Shall I read them again?

DR. BROWNLEE.—I move that the report be adopted.

DR. NOLIN.—I second that. Carried.

DR. WOODBURY.—I move that the Secretary cast the ballot for Drs. Brown, Nolin and Oliver as members of the Executive Committee for the city of Montreal.

DR. MCINNIS.—I second the motion.

THE PRESIDENT.—I have pleasure in announcing the election of Drs. Brown, Nolin and Oliver to the Executive Committee, resident in Montreal. Is it the pleasure of the Association that the By-law be suspended, and that those be appointed? Carried.

THE PRESIDENT.—I appoint Drs. Woodbury and McInnis to introduce the President-elect.

DR. WOODBURY.—Mr. President, we have great pleasure in introducing the President-elect of the Canadian Dental Association.

DR. DUBEAU.—Gentlemen, I thank you very much for the honor you have conferred upon me. I accept it with pleasure, and will do my best to promote the interests of the Canadian Dental Association. As I said last night, this Association was born in Montreal two years ago, and being amongst those who presided at its birth, I, as well as the others, was glad to go in and assist it as much as I could. I wish to congratulate the dentists from Ontario for this successful meeting, which has been a very profitable and enjoyable one, and in Montreal, where we hope to see you all in two years from now, we will try to extend to you the same courtesy as you have extended to us. I thank you, gentlemen.

The President.—I appoint Dr. Cowan and Dr. Thompson to escort Dr. McInnis to the Vice-President's chair. (Dr. McInnis takes the Vice-President's chair.)

Dr. McInnis.—Gentlemen, I can assure you that I am just as well tickled as you are with it. I shall endeavor to perform my duty, of course, as I always have tried to do in connection with the Canadian Dental Association, and with the profession in general in the Dominion of Canada. I feel, gentlemen (and, as you are invited to go over the college of the Ontario dentists on College Street, I will be brief), that I should take the opportunity of saying, as our coming from outside of this province, that I wish to express on behalf of the outsiders, the great pleasure which we have had in being here and the great profit which the meeting has been to all of us, and the great satisfaction it has given us to receive the hearty hospitality which the dentists have extended to us. And in doing this, and I do so with the hearty support of those who come from the outside, I wish to take the opportunity to express to you, Dr. Willmott, the feeling of pleasure to the entire society to have had you as president (applause), and to again assure you, sir, that it is not only a pleasure, but we feel, sir, that we have been honored by having you in that office (applause), and we wish to express the hope that you may long be spared to continue to take the active interest which you have in the profession, and in its welfare throughout Canada.

Dr. Woodbury.—Gentlemen, I think it is entirely appropriate that we formally here express our appreciation of the manner in which our President, who has just retired, has conducted the business of this Association, and the deep interest that he has displayed in all the details of its work, and the successful way in which it has been carried out. I beg to move this resolution.

Dr. Nolin.—I have great pleasure in seconding this motion.

The President-elect.—Shall the motion be carried? (Applause.) Carried.

Dr. Willmott.—Gentlemen of the Association, all I can say is, that I am exceedingly grateful for your manifest appreciation of the course which I have pursued. I have very many times since the meeting in Montreal, when I accepted the office, and especially during the past month, felt nervous, and had a good deal of misgiving about my ability to discharge the duties of the office. Let me say that I have never been president of any dental association up to the present time. I have been secretary, but I have never been president until I presided over this Association. Since the meeting commenced, the attendance has been very satisfactory, and the punctuality observed has been exceedingly good. Everything connected with the Association has gone off with such success, and so very pleasantly, that I have felt very glad that I have been President of the Association. I am honest in the expression of my feelings in that respect. I trust that the future meetings of the Association will be equally successful. Now, Mr. President-elect, I turn the affairs of the Association over to you in good order.

The meeting came to a close with the singing of the national anthem.

Clinics at the Canadian Dental Association.

BURNISHING GOLD.

By Will C. Davy, D.D.S., L.D.S., Morrisburg, Ont.

The clinic illustrated some of the uses of burnishing gold, viz.:

1. In buccal or lingual cavities, where it is difficult to use the plugger.
2. In small pit cavities better margins are insured.
3. Where a proximal filling has been inserted and the incisal angle has chipped off subsequently, gold may be added by burnishing, and the filling built down to restore the broken corner.
4. Where a defective margin is found in a filling, this may be corrected by burnishing gold to the filling in place.
5. Where frail walls exist, which would not stand the blow of the plugger, and it is essential from an anesthetic standpoint that these walls remain, a gold filling may be burnished to place.
6. Where erosion is progressing rapidly on a labial surface, a small cavity may be made and a gold filling inserted, the gold being extended over the margins to protect the affected area till the period of active erosion ceases, when the filling may be cut down or removed and porcelain inserted.
7. Where moisture has entered a cavity while a gold filling was being inserted, the gold in the cavity may be polished and the filling completed by burnishing.
8. In repairing crowns or bridges, if the cusps have been swaged of pure gold, any wearing down of those cusps may be restored by burnishing gold to them.
9. If a facing has been broken off a crown or bridge and the backing has been of pure gold, the original contour may be made by burnishing gold to that backing.

ALUMINÆ GUTTA PERCHA POINT FILLINGS.

By C. A. Murray, Moncton, N.B.

After having satisfied myself that the tooth is in a proper condition to fill, I use my judgment as to the proper filling material. In most cases I use Dr. Kinsman's Aluminæ Gutta-Percha points. These I consider much superior to any root canal filling I have ever used. I can highly recommend this to the profession, as I have used them for some time and have yet to record my first failure.

These points are made in all sizes, the metal cone being covered with a preparation of gutta-percha which adheres most perfectly to the metal. After the root canal is prepared for the reception of the filling, I take a small nerve broach and ascertain the length of the canal, then select a point suitable, marking on it the proper length. Warm the point slightly so as to make the gutta-percha soft. Press the point up the canal the proper distance. I usually mix a small portion of oxpara to about the consistency of thin cream, and line my root canal with the mixture. This will act as a perfect antiseptic. Should at any time you wish to remove the filling from the canal, the point can be drawn out by a pair of pliers very easily.

Selections

PATHOLOGICAL IRREGULARITIES.

By M. H. Fletcher, D.D.S., M.D., Cincinnati, Ohio.

Read at the fifty-fifth annual session of the American Medical Association, in the Section on Stomatology, Atlantic City, June, 1904.

The terms orthodontia and irregularities of the teeth conventionally carry with them the idea of irregular teeth in children and youth, connected with their treatment for correction. The causes are usually hereditary, but may be acquired. One could quote from writers from Etruscan days down to the present time and give the opinion of more than fifty authors, but their definitions of the etiology would most likely each differ somewhat from the other.

There have been handed down to us such explanations as " She inherited large teeth from one parent and small jaws from the other," or " His baby teeth were not extracted soon enough," or " were taken out too soon." " Lack of absorption of the roots of the temporary teeth, while the growth of the permanent set is rapid," etc. One author thinks " the development of the hind end of the jaw does not keep pace with the absorption of the front end."

Then there are a lot of platitudes, such as " The teeth are too large for the jaw," " Too many teeth for size of the jaws," " Projecting jaws," " Sleeping with the mouth open," " Enlarged tonsils," " Want of room in the jaws," etc., etc.

In summarizing the above opinions it would seem that symptoms, or results, have been given in place of the real cause. Nevertheless, this is only another opinion.

ETIOLOGY.

Guilford divides the causes into hereditary and acquired, and Colyer into general and local.

" Talbot has shown that irregularities of the teeth were often due to two factors. Those of constitutional origin, which develop with the osseous system, and those of local origin." " The deformity always commences at the sixth year and is completed at the twelfth." " Forward movement of the posterior teeth produce the same result as arrest of development of the maxillæ. It was also shown that the vault is not contracted by mouth-breathing. That contracted dental arches are as common among low as in high vaults and that they simply appear high because of the contraction. That mouth-breathing due to hypertrophy of the nasal bones and mucous membrane, deformities of the nasal bones, adenoids, or any pathologic condition producing stenosis, does not cause contracted jaws, but all these conditions are due to neuroses of development."

EFFECTS.

The ill effects of these deformities must be apparent to such an audience as this with a mere suggestion. The degree and extent of the ill effects have not only to do with the unsightliness of the patient, but Talbot has done much to prove the connection of extreme cases with idiocy and crime.

Aside from uncomeliness, irregularities undoubtedly interfere with the proper care of the teeth and gums, and in this manner are a large factor in fostering diseases of the alveolar process, including the surrounding tissues; many times involving other parts of the jaws, the nose, eyes and ears, often inducing chronic disorders of digestion and fostering the causes of zymotic diseases. Neuroses of many varieties may have their origin in diseased alveolar process and teeth.

TREATMENT.

As to treatment, our best men differ in their procedures. Cleft palate and harelip are, of course, dealt with from a surgical standpoint. Prognathic cases, showing atavistic tendencies, with diastoma behind the canines, are sometimes treated surgicaly by removal of bone from these spaces, but such treatment is rare. In the treatment of lesser deformities mechanics are almost entirely relied on. Some operators resort to the removal of one or more teeth in order to accomplish the desired end. On the other hand, Dr. Angle says, "The best balance, the best harmony, the best proportions of the mouth in its relation to the other features. require in all cases that there shall be the full complement of teeth, and that each tooth shall be made to occupy its normal position. And if we accomplish this we shall have satisfied the demands of art, so far as they are concerned in the relation of the mouth to the rest of the face."

To restore the features to harmony and the teeth to perfect position and usefulness requires mechanical skill of the highest order, coupled with an esthetic sense and artistic eye.

PATHOLOGIC IRREGULARITIES.

Definition.—In contradistinction to the above, there is a class of irregularities not treated of in works on orthodontia, nor have they been considered under the head of dental orthopedia. In fact, these cases seem in a way to be "the stones which the builders disallowed."

They are in many particulars the exact opposite of the others. 1. They do not appear until the age of mature years. 2. They are purely acquired. 3. They are entirely pathologic, in the sense that they are the result of disease, localized in the alveolar process. 4. They are only amenable to mechanical treatment by first removing the causes of the disease producing them.

Name.—In order to distinguish these from those previously described, the writer has called them pathologic irregularities.

Etiology.—To describe all the causes of pathologic irregularities would be to give a treatise on interstitial gingivitis known also as pyorrhea alveolaris and Riggs's disease.

To make the matter plain from my standpoint it will, however, be necessary to briefly describe the anatomy, the pathology, and the causes, with treatment other than mechanical.

Anatomy.—An intimate knowledge of the anatomy is, of course, necessary in order to comprehend the pathology, or to apply treatment intelligently. It is presumed this is understood.

Now, when we consider that a hard, unyielding substance like a tooth is not only supported and held in place by, but entirely dependent on, the thin, bony walls of the alveolar process, it is a marvel to realize what hard usage it withstands, and what enormous pressure and lateral strain it is continuously subjected to without displacement or injury. Let this bone become diseased, however, and ere long the teeth become tender and unusable, and vast numbers are finally lost without the least defect in the tooth itself.

In the last decade these diseases and their treatment have engaged the attention of the profession to a marked degree, much to its credit.

Terminology.—To Talbot is due the credit of having classified the various phases of this disease and described its different stages. He has given the name "interstitial gingivitis" to inflammation of the gums, alveolar process, and peridental membrane. The terms Riggs's disease and pyorrhea alveolaris were formerly applied to any or all the stages and conditions.

The term Riggs's disease is indefinite and is to-day obsolete. Pyorrhea alveolaris now indicates a flow of pus from the sockets about the roots of the tooth, and is a terminal stage of inflammatory action. It is the result of previous inflammation known as interstitial gingivitis. Inflammatory action may continue, however, and exfoliation of the teeth result without pus infection. One termination of the inflammatory action is the tendency of the teeth to be expelled from their sockets, with the result that they become elongated, tilted to one side, or pushed in or out of the normal arch.

To give a plan of arresting this process before it has gone too far, and to replace the teeth into their normal position is the object of this paper.

Causes.—In order to arrest or eradicate a disease, its causes must first be found and removed. Talbot says, "The local causes which produce interstitial gingivitis are an accumulation of tartar about the necks of the teeth, decayed teeth producing hypertrophy of the gums, unfinished fillings, gold crowns and bridge-work, artificial dentures, rapid wedging of the teeth, collections of food and everything that will produce irritation of the gum margin, setting up a chronic inflammation or gingivitis. This in turn extends to the deeper tissues (the peridental membrane and alveolar process), where it becomes interstitial in character. The constitutional causes which act locally, producing interstitial gingivitis, are the toxic affects of mercury, lead, brass, uric and other acids, potassium iodide, and other agencies acting in a similar manner, such as scurvy," etc.

He further says, "Auto-intoxication (meaning self-poisoning due to a faulty metabolism) is the great cause of interstitial gingivitis resulting in pyorrhea alveolaris."

In contradistinction to investigators who hold that the disease is often entirely systemic, the writer's opinion is that the disease must have a local cause, this cause producing a point of least resistance for the localization of systemic disorders, which general disorder or condition of auto-intoxication increases the local symptoms.

There seems no reason to believe that drug poisoning or other morbid systemic conditions can produce interstitial gingivitis unless a lesion of the gum pre-exists. This lesion may be the merest break in the mucous membrane, caused by the smallest deposit of calcareous material, this local mechanical irritation being one requisite of the etiologic movement. On the other hand, there may frequently be found in gingivitis the systemic disorders accompanying cases of sapremia and septicemia.

The continual pressure against the gum tissue of rough, irritating calcareous deposits, which continually increase in quantity and insinuate themselves deeper and deeper beneath the soft tissues, are accompanied with all the products of repair by granulation or second intention, and may be accompanied by surgical fever. These deposits may be found wherever saliva can penetrate. It has never been my privilege to see deposits of tartar about the necks of teeth that were innoxious, but they are always irritating to some degree, and usually greatly so. This condition may exist in all stages, from that of being imperceptible to the naked eye up to a complete state of pyemia, and may result in death.

On the other hand, there is abundant evidence to show that auto-intoxication, or a low state of health from any cause, greatly favors the progress of the disease, and with this state of affairs present a chronic pus-forming condition may soon be found about one or more of the teeth where the local exciting cause exists, but that auto-intoxication or other systemic disorders cause this disease, without local irritation, does not appeal to the writer's reason any more than to say that the same disorders cause inflammation of the pleura or conjunctiva without a local point of least resistance from local cause.

Degeneracy or faulty development may bring the etiologic moment at a very early stage of the local irritation. This might be almost coincident with the initial lesion, whereas in normal and healthy individuals the pyorrheal stage, even in its mildest form, may be deferred indefinitely or never appear even where calcareous deposits are excessive.

The fact that the tissues involved are transitory in nature does not seem an adequate factor in accounting for the disease, as suggested by Talbot, since they are as transitory in cases where the disease does not exist as where it does, and these tissues recover as readily as other structures which are not transitory.

There seems no question but that calcareous deposits about the teeth should be looked on as noxious foreign bodies, and that the constant effort on the part of nature to extrude them results in the progressive death of the surrounding tissues, with the malposition of the teeth as one result. We find in this disease zones of granulation tissue with the result of destructive metabolism in the soft tissues and the creation of sequestra in the bone. This condition, however, is changed to constructive metabolism the moment the tartar, sequestra, or other local irritants are removed.

The sinus in the pyorrheal stage of this disease is between the root and alveolar process, unless the lesion be so deep in some place on the outside of the process that a gingival abscess is formed. In either event the alveolar process is continually bathed in pus, which results in its destruction. So long as the tartar is present as a foreign body the irritation is continuous and sequestra are formed which are a second source of irritation until they are removed or absorbed.

All these cases will heal by removal of the deposits and sequestra or by the loss of the affected teeth. The removal of the teeth invariably results in recovery, and a patient without teeth, either young or old, cannot have the disease, regardless of transitory structures, degeneracy, heredity, drugs, environment, or systemic disease. If lesions of the gums or maxillary bones appear where there are no teeth, it is not interstitial gingivitis, but something else.

Of all the causes mentioned, the writer believes that 90 per cent. of cases of interstitial gingivitis are due to hard deposits about the teeth.

Treatment.—As to treatment, I believe that all authorities are agreed that absolute removal of all deposits about the necks and roots of teeth is the first requisite to recovery. In my own hands this requires from three to ten sittings, approximately a week apart, washing out the socket each time with hypodermic syringe, using 50 per cent. alcohol, saturated with boracic acid, painting the gums with iodine or iodide of zinc. They must then have constant care thereafter from one to six times a year in order to preserve a good state of health, or a " healthy stump," as surgeons say. Dr. W. A. Price, of Cleveland, has had good results by local treatment with the X-ray after having removed the deposits.

As to instruments, each one capable of doing the work will adopt his own methods and choose his own instruments and remedies for local treatment. If the diagnosis has been correctly made the practitioner will be the judge as to whether systemic interference be necessary. If constitutional treatment is called for, abstinence from excess of nitrogenous and acid foods, with the necessity of ten to twelve glasses of pure water daily and the addition of lithia for a period is usually indicated.

Much can be learned about the condition of the system by examination and analysis of the saliva and urine; neither should be more than slightly acid and both should be normal in other particulars.

Talbot says: "In the severer types of disease, such as tuberculosis, asthma, chronic indigestion, kidney disease, etc., very little curative effect is to be expected from treatment. Constitutional treatment is tentative, since autointoxication will continue in most cases until death. The chief treatment of such cases will be removal of local irritation.

"The system excretes forty ounces of water daily. If this amount be not taken into the system, or if it be not eliminated every twenty-four hours, auto-intoxication will follow. Every drop of water taken into the stomach enters the blood. It is one of the best purifiers which we possess. From five to seven pints of pure water should be taken each day to flush the blood and kidneys and thus cleanse the system."

Mechanical Treatment.—The causes having been determined and treatment carried well along, the malposition of the teeth should begin to have attention. This is usually begun before healing of the tissues is complete. The writer has had the most satisfactory results in these cases by straightening out their defects in the same manner that ordinary irregular teeth are treated. A description of the mechanical devices contrived and used for the purpose of regulating teeth would fill large volumes; yet in addition to all these the inventive powers of the operator are continuously called on in carrying these cases to satisfactory completion. In my own hands cumbersome regulating appliances have largely given way to a most simple plan, namely, that of a simple bow of heavy German silver wire on the outside of the dental arch, so adjusted that the teeth are drawn to it by the use of ligatures of German silver or platinum instead of silk or rubber. Torsion is produced by putting on a band to which a tube is soldered; in this tube is inserted a spring lever, the outer end of which is ligated to the bow. The use of the bow on the outside of the arch is one of the oldest devices known, but the manner of its handling is varied, being susceptible of a great variety of uses.

The resiliency of the heavy bow is such that its steady pull or push moves the teeth out or pushes them into line. Its resiliency can also be utilized to expand or contract the strongest arch. It has nearly done away with jack-screws, Coffin plates, and many other intricate and annoying appliances where they were formerly used, and simplifies the treatment to a very great degree, and has done so in my hands for the past ten or more years.

This bow and its accessory appliances being entirely on the outside of the arch are much less annoying than appliances inside, and are very much more effective. It will be found that pathologic irregularities yield to pressure more readily than in younger persons because of the partial loss of alveolar process; then there are no short, partly erupted teeth to be dealt with.

Regarding the imaginary difficulty of changing the shape of bones in mature adults, it may be said that live bone never becomes so old that it will not yield to continuous pressure, and teeth are more easily replaced into a former position than moved into a new one. Nevertheless, two of these cases here presented show where adjoining teeth have been brought together and occupy spaces where a tooth had been extracted or lost from disease, both in patients fifty years of age.

As to changing the shape of bones, Dr. M. H. Cryer says, "After the birth of the child muscular action and various forces have direct influence over the change of the bones, according to the following general laws: The normal application of forces in developing bone results in the normal development of the form of the bone. The abnormal application of forces under the same circumstances results in the development of an abnormal form. Abnormal applications of forces to bone in adult life will also change and modify the shape and character."

These pathologic cases, like the others, must be retained in their new position for a period of months, maybe years, or until the bony arch has become thoroughly ossified again. This is usually done by ligating them with platinum ligature. Sometimes a heavier platinum wire is fitted to the lingual surfaces and ligated to the teeth with the light platinum. The German silver and platinum ligature is No. 25 B. & S. gauge.

In November, 1893, I presented one of these cases, giving this plan of treatment, and read a paper on the subject before the Cincinnati Odontological Society. Since that time I have treated several additional cases with most satisfactory results.

DISCUSSION.

DR. EUGENE S. TALBOT, Chicago.—I appreciate highly the new term coined by Dr. Fletcher, "pathologic irregularities" of the teeth. It is an important and common condition, and classified under this head defines the pathologic state. The tooth itself is to a great extent a foreign body in its relation to the alveolar process. The tooth, from want of antagonism, constantly move in the alveolar process due to interstitial gingivitis. This is particularly true of the old method of separating teeth by the rapid process for filling. An interstitial gingivitis was set up, because of this the teeth separated, and in later years a space resulted between the teeth. Because of the transitory nature of the alveolar process, an interstitial gingivitis always occurs after the second teeth have obtained their position. There is what may be called an inflammatory process continually going on in the alveolar process. This is the reason why a dental arch which has lost one or two teeth is always more or less out of order. This "inflammatory process" starts an absorption of the alveolar process, because of which the teeth move in different directions. How far such an alveolar process can be restored is an open question. Some operations of Dr. Fletcher, beautifully performed, bring the teeth back into place and hold them in position until the alveolar process is restored to partial health. It is never restored to complete health. This last is a physical impossibility. Local treatment is all right, so far as it goes. It is very essential that the deposits should be removed; that the roots of the teeth should be thoroughly cleansed, but besides that there is considerable to be done in regard to draining the system. It is necessary to restore the excretory organs to their function. Autointoxication is the great determining factor, no matter what the systemic condition may be. The greatest cause of this is intestinal fermentation.—*International Dental Journal.*

THE TEETH OF THE RISING GENERATION.

By Dr. W. H. Williamson, Aberdeen.

Extract from address delivered before the British Dental Association held in Aberdeen, Scotland, August 6th, 1904.

In dealing with the question of the teeth of the rising generation, with reference to the 1903 report of the Commission on Physical Training in Scotch Schools, and especially to the following sentence: "Contrary to what might have been expected, the children of Edinburgh are ahead of those in Aberdeen in this respect, exhibiting a percentage of only 7.45 of retarded dentition as against 18.7 in the latter city. We did not obtain any explanation of the strange fact that the Edinburgh child in the race towards maturity is ahead of his taller and weightier brother in Aberdeen. The large number of children in both towns who present decayed teeth is remarkable, but the bearing of this upon physical education is an indirect one," Dr. Williamson said:

This note dismissed the whole subject, just as if the dental organs, decayed or sound, were of no great importance in the economy of nature, and might, for all the use they were, be hung on a string and worn as a necklace. The South African war was an object lesson that opened the eyes of the military authorities to the fact that numbers of men were rendered inefficient simply owing to the condition of their teeth. For example, an officer who had been out there had told him that in Kitchener's famous drives it was a common thing for men to be left behind because they were unable to tackle the sort of rations provided on these forced marches. The consequence was that they were obliged to send out twelve civil dental surgeons to assist those on the spot, and the results had been so remarkably satisfactory that in April of this year eight army dental surgeons were appointed to attend solely to the home army establishments. With all those claimant facts staring them in the face, did it not seem strange that the great army of our children passing through the stages of life which had the making or the unmaking of the adult—the raw material of our future army, in fact—should be deprived of the small dental assistance which our soldiers received? What was called a remarkable fact, that there were so many bad teeth, seemed to be regarded as a sort of interesting point in the same category as retarded dentition, and that their presence had no ulterior effect upon the bodily health one could hardly gather from the Commission's report, and yet what a picture of pain and suffering would any thinking man draw from the statement. How many children were bodily and mentally disabled for their school work by constant attacks of toothache—in the acute attacks of nerve pain, or the more wearing and long-drawn-out kind produced by alveolar abscess? No doubt it often happened that many a child in Board schools was being punished or spoken sharply to for listlessness or inattention arising solely from those dental causes. In one town, with a school population of six thousand, the number of absentees amounted to five hundred daily. A fair proportion of these absentees were prevented from attending through preventable diseases, which not only meant a loss to the child, but a distinct loss to the ratepayers. But, as they well knew, between the acute stages the teeth were often not actually serviceable, because, being more or less tender, especially if the child had teeth in this condition on each side, it could not use either, and merely nibbled with the front teeth, which could not by any stretch of meaning be called mastication. Not only that, but where in the common form of fungous pulp, or from abscesses, there was a constant discharge of pus into the mouth and stomach, there was a condition known as oral sepsis, which physicians were only beginning to recognize the importance of in producing anemia and lowering the tone, which rendered the patient the more susceptible for diseases of all kinds. It is to be hoped the members of the Association would realize that it was the duty of the profession to point out as strongly as possible, and to protest against, the errors of commission and omission in the Commission's report, which deprived the dental part of meaning and value, and which was doubly serious, going out as it did with the voice of authority, and designed to be accepted by a confiding public, who naturally would accept it, along with other parts, as the opinion of experts, or, at any rate, of the men best qualified to give such an opinion. The voice truly was that of Jacob, but, at any rate, they recognized that the hands were those of Esau. The Association might claim to have done a noble work in this direction, and also through the School Dentists' Society, which, with much self-sacrifice, had organized a system of dental aid in a number of union district schools in the London district and elsewhere throughout England. It must be admitted that the task of providing proper dental attention in the national schools was a stupendous one, and would require a large expenditure of well-spent money, for it would necessitate the employment of paid dentists, whose sole duty it would be to attend to the needs of children, exactly in the same way and for the same weighty reasons that the army dental appointments had been made. Dealing with hygiene, what with the carelessness of the children and the indifference of many parents, it was impossible to hope for any dental millennium in regard to hygiene until it was recognized that instruction in schools was the only way to attain it. In conclusion, with chastened yet cheerful spirit, we hope to continue the work of the Association and to make it an ever-increasing and important factor in the progress of our profession, and in so doing contribute our due share towards the promotion of the physical well-being of the race.

THE ROLE OF THE DENTAL STUDENT.

By Leonard Matheson, L.D.S., Eng.

Paper read before the Royal Dental Hospital Students' Society.

We all know that famous saying of the cynic, Jaques, "All the world's a stage, and all the men and women in it merely players; they have their exits and their entrances, and each man in his time plays many parts." And among the many parts that you and I have to play, in the acts of the "Seven Ages," our principal part is that of the dental student. I say "our" principal part, for are we not all students together, seeing that the man who bases his work on scientific and professional principles must be a student to the end of his life, and should, indeed, in a certain sense, be a more ardent student with every year of his life?

What then do we need in order to play aright the *rôle* of the dental student? The actor has to satisfy certain needs before he can play his part. The text of his part, the appropriate dress, the voice, the bearing, above all, the ability to "live" the character that he is called upon to depict; all these the actor needs. What must be our equipment, our attitude, our manner of life, our way of looking at our work, if we are to be successful actors, if we are to tread the boards with any measure of success?

Well, what are we dental students for? It is not enough to say that we are dental students in order that we may learn how to practise our profession. What do we mean by the "practice of our profession"? Surely in the answer to this second question lies the answer to the first. For unless we clearly understand what we mean when we speak of practising the profession of dentistry, it is obvious that we cannot have a very clear idea as to the part we are called upon to play as dental students.

I am, therefore, going to ask you to consider with me what we mean by the "practice of our profession." In doing so I desire to offer an apology at the same time that I try to fulfil an old promise. Many months ago I had the pleasure of addressing this Society. I spoke only from rough notes. I was asked afterwards to throw what I had said into a written form. This I promised to do, and my promise, I humbly regret to say, has never yet been fulfilled. Now I shall try to fulfil it; but in doing so I must apologize—first, for the long delay, and secondly, for serving up an old dish under a new name. I can only hope that if there are any here who were present on the occasion to which I have referred, they will forgive me, and listen with what patience they can command to a twice-told tale.

Let me, then, put two or three questions—questions that anybody might ask, questions that often are asked; and let me, as briefly and as clearly as I can, attempt to answer them.

(1) What do we mean by "the practice of our profession"?

(2) What are the qualifications required in order that we may practise properly?

(3) What are the qualifications required in order that we may practise successfully?

1. Now the answer to the first question involves a very difficult point. It compels us to consider what we mean by the terms "professional" and "profession." How do we define these words? Can we define them? We have more or less vague ideas concerning them. We may even think that our ideas are quite clear and quite capable of definition. But if we are asked to express our ideas in so many words, some of us, at least, find the task a difficult one. I am free to confess that I have found it so myself; for I have been trying lately to put down in black and white my thoughts on the subject. As the result of my efforts is to be published in the course of the next week or two, I shall not go into the matter at any length on the present occasion.* But let us see whether, in brief terms, can we say what we mean by the word "profession" as applied to dentistry? Why should we decline to describe ourselves as business men? Why should we object to dentistry being called a trade? Is

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*See *British Dental Journal*, May, 1904.

there anything dishonorable in business? Need any man be ashamed to follow an honest trade? Surely it goes without saying that a business can be pursued honorably, as well as profitably. And it goes likewise without saying that nobody but a snob need be ashamed of following a useful trade. But it is dishonorable to pursue a profession as a business pure and simple; and it is a thing to be ashamed of to take up a profession and turn it into a trade. Now, why is this so? It is because of the essential difference between a business and a profession—between the spirit which animates the one and the other—between the aim of the business man as compared with that of the true professional man.

A business, in its essence, consists in buying and selling—buying in the cheapest, and selling in the dearest market.

A profession, in its essence, consists in accomplishing the end towards which special skill and special training is directed.

Take one or two simple examples. Merchants, shopkeepers, stockbrokers, are business men, whose main object it is to make as large a turnover as possible; that is to say, all their energies are primarily directed towards the making of profits and the acquisition of wealth. On the other hand, a student of science, an artist, or a physician, these are professional men, who, though they obtain a livelihood by means of their work, are compelled by the very nature of their work to put their work first, and the remuneration they receive for it second. The scientific man, if he is worthy of the name, must make his observations, his investigations, his experiments, his first consideration; the artist, he who is possessed of the creative faculty, if he has any real gift or inspiration, cannot help putting first his picture, his statue, his poem, his sonata; and so also the physician, whose work consists in the application of the healing art—he, unless he is prepared to forfeit the name of professional man, unless he is prepared to prostitute his calling by making it a mere shekel-grinding machine—he must ever direct his energies in the first instance to the healing of sickness, to grappling with disease and death. In other words, he must make his patients' well-being his first consideration. And he must do this, not from a quixotic notion that there is anything derogatory in accepting remuneration for services rendered, but he must do it simply because unless he puts his patients' interests first he will find that the quality of his work will suffer. If a physician makes his pocket, rather than his patient, his first consideration, it is as certain that his work will deteriorate as it is certain that the earth goes round the sun. For if he assumes the unprofessional attitude of the business man who looks first to the profit that is to be made, you will find inevitably that his judgment becomes warped, his knowledge becomes perverted, the edge of his skill becomes dulled and blunted, and he will constantly be taking an easier way than the right way for dealing with his cases, in order to save himself time and trouble and expense. Why is this? Simply because the interests of a man's pocket and the interests of his patients so frequently clash—they are not infrequently diametrically opposed; and so, unless he resolutely keeps before him his patients' welfare as his first, his prime concern, he cannot escape the temptation continually besetting the path of the practitioner to let "second best" stand in the place of "best," and to value a well-filled purse more than the satisfaction that is to be found in rendering faithful service.

Now, viewing the title of professional man in this light, where do we, as dentists, stand? We stand in precisely the same category as the surgeon or physician. We are professional men, not merely because of the special knowledge and skill that we have to acquire in order to pursue our calling aright, though this helps to give us our position; not merely because we dispose to others of our skill rather than of material goods or commodities, though this, too, helps to give us our position; our principal claim to the title of professional men is justified in just so far, and only in so far as we look upon ourselves as worthy of the trust of those who come to us for advice and treatment. They place themselves in our hands; and if we honor their confidence by using our knowledge and our skill to the utmost in their behalf, then, and then only, can we rightly take our place among those members of the community whose prerogative it is to find in their daily work a less sordid ideal than that of only piling up an income.

And so we must answer our first question thus—that what we mean by the practice of our profession is the pursuit of our calling in a professional spirit. That being granted, that being our starting point, that being the foundation of all else for us, that being the attitude in which we approach and propose to carry on our work—what comes next? The would-be actor sets out with high ideals concerning his art and the way in which he is going to engage in it; but these high ideals are not much good to him until he has at least learned the words, the text of the various parts he proposes to play. Well, then, what is our text, without learning which we cannot even step on to the stage of practice—much less aspire to a successful performance? As the text of his part is to the actor, so to us is the knowledge we have to acquire during the long period of training that we are called upon to undergo. Quite briefly stated, what is this knowledge? At the beginning of the ladder stands our boyhood's education, leading up to the Preliminary Examination in Arts. This, of course, is as it should be. For unless we can show that we possess at least a minimum of knowledge and—what is even more important—unless we can show that we have some capacity for learning—unless we can do these things, what is the use of entering upon studies and attempting to take up work that requires, at the lowest estimate, at least a modicum of brains and ability? Well, we pass our Preliminary, and then? Then we enter the dental laboratory, and our special *rôle* begins; for at once we begin to learn the details of the craft that is to form part of our equipment. Much there is to learn in the time, all too short, that is allotted to this part of our training, and he who fails to make good use of his opportunities in the work-room is, between you and me, either a fool, or he has been grossly misguided. I cannot, indeed, use expressions too strong, for such a man's failure is the fatal failure to understand that, unless based on a thorough knowledge of dental mechanics, his subsequent training will largely be thrown away. In the work-room we learn the general principles and the multitudinous minutiæ of the processes connected with the designing, the making, the adaptation to infinitely varying conditions, of artificial substitutes for natural organs lost by disease or accident, and unless we ourselves master these processes we shall fail, and fail lamentably, in directing the work of others, as well as in satisfying the needs of our patients.

But there is another thing. Our work at the bench, at the vice, at the lathe, is of value not only as giving us a solid grounding in dental mechanics: it trains us, or should train us, in habits of accuracy, of method, of minute thoroughness, of nimbleness with our fingers, without which we can achieve no really satisfactory results later on.

And then, along with our initiation into practical work, comes —if it has not come before—our introduction to the laws that govern the universe of matter. For that is what is meant by chemistry and physics. And if, when we commence our study of these subjects we realized one-half of their importance in their bearing on our special work, we should throw ourselves into them with a good deal more zest than we generally do.

And now we reach another stage; the stage that some of you before me now have just entered upon: we make our *début* at the hospitals. What is our *rôle* there? It is a double one—to acquire knowledge and to acquire skill in the application of that knowledge—at least sufficient skill for us to be let loose upon a confiding and unoffending public. As those who are called upon to understand and to practise the surgery of the teeth, we must —if we are to do our work as intelligent men, and not as mere empirics or quacks—we must thoroughly understand the principles of general surgery; these principles we can only properly grasp by a clear insight into pathology, and it is only possible to obtain a reasonable appreciation of the processes of pathology (the science of the abnormal), by obtaining first an understanding of the laws and processes of physiology (the science of the normal). Finally, physiology— the study, that is, of the normal functions of healthy organs and tissues—can, of course, be of no use to us without a knowledge of those organs and tissues, as comprised in the science of anatomy. You see, I have worked backwards, but to reverse the order; we must have, as our foundation for all else, and without which our superstructure must be but a crazy affair, a sound knowledge of anatomy—general and minute—bones, muscles, nerves, organs, tissues: then comes physiology, which teaches us the use of these various parts of the human body; then comes pathology, that teaches of perverted function and abnormality in the processes and tissues of the body; and then, and not till then, comes a right understanding of the principles and methods of surgery, which is the science and art of dealing with abnormal conditions, either by eliminating them or by restoring them to a sound and healthy state.

Such, put into the briefest possible compass, is the end and object of our studies at a medical school. And you will allow me, in passing, to make this important remark: that the requirements of our training, calling as they do for such an understanding, a clear and sound understanding of the principles of medicine and surgery, we are, happily for us—and we must always be—bound by the closest of bonds to the august and noble profession of medicine. The dental profession stands towards medicine in the relation of a child to its parent; and if the performance of our special function in the commonwealth differentiates us from medicine as a whole, we are none the less linked—and must always remain honorably linked—in close relationship with the ancient art of healing; for what is our life-work but to heal and to restore?

But along with our general medical studies we have to go on specializing. I need not dwell on the value to us of lectures on our particular subjects, except to say this, that if you are to have right practice you must first have right theory; and whilst it is the fashion to decry lectures, my own feeling is that they should be most valuable as giving the personal note of experience and precept which does so much in skilful hands to clothe and quicken the dead bones of dry fact.

But it goes without saying, that by far the most important part of our special preparation lies in the cases we see, the cases we treat, and the operations we perform. He is the wise man, and only he, who makes diligent use of his opportunities in this direction, and who thereby does his utmost to diminish the occasions of humiliation which come, after leaving hospital, to all, but most frequently to him who has shirked his work here. And by using opportunities I mean not only getting in as many cases as possible, not only a readiness to undertake difficult cases, not only a determination to overcome such cases rather than to be overcome by them—but also, and chiefly, the making of quality rather than quantity the goal we aim at. Our work, in its minuteness, its delicacy, and in the frequent inaccessibility of the parts we have to treat—our work, to be done properly and adequately, is so exceedingly difficult, that it requires often the exercise of the utmost patience and perseverance in order to carry out the details of our operations in the way we know they ought to be carried out. But of this we may be sure, that unless we carry out each and every step of any given operation with the deliberate resolve that we will not rest satisfied short of such absolute perfection as we can attain—if we do not approach our work in this spirit, we had better turn to something else. For dentistry is a poor thing without accuracy, without precision, without, in fact, such thoroughness as can only be come at by the strictest concentration, and the closest attention to points almost microscopic in their minuteness. All this means a great deal of time spent over every case, but time should never be grudged, and it is the height of folly to imagine that rapidity is of more importance than exactitude. Many years ago—I do not remember exactly when it was, but it was, I know, very early in my professional life—I made a rule for myself that has ever since stood me in good stead. I said to myself, " Be as thorough as you can, be as rapid as you can, be as gentle as you can." Since speed and gentleness are both of little or no value without thoroughness, let the latter always stand first—let your thoroughness be as absolute as the circumstances of the case will permit. Then be as rapid in all your movements as you possibly can. And, finally, in all your thoroughness and in all your speed, take all the pains you possibly can to reduce to a minimum the suffering and discomfort which you are called upon to inflict.

Here is a *rôle* for you, as varied as it is strenuous. It means work, it means hard work, it means very hard work. And the man who is afraid of hard work had better leave dentistry alone; for it offers no primrose path of easy dalliance: on the contrary, it involves such daily, I may almost say hourly, strain on one's temper, one's patience, one's honor, as no one who has not grappled with its difficulties can possibly realize. But if we are not afraid of hard work—and why should we be, when possessed of youth's happy energy and optimism?—then, the very difficulties it presents may only give an added zest and interest to our pursuit. Ever since the first man hunted his first quarry, and strove with the elemental forces that Nature arrayed against him, men have found a relish in fighting and mastering the adverse circumstances of their lives, and in refusing to allow any limits to be set upon their action but the limits of their own power.

Refusing, then, to be frightened by the difficulties of our work, facing them in the spirit of the old proverb that says, " It's dogged as does it," we arrive, as some of us here have very recently arrived, at the termination of our hospital career.

We reach our final examination; with our heart in our mouth;

we hear our name read out as one of the successful candidates; we throw up our cap, we feel as if we wanted to shake hands with everybody, we despatch telegrams, we sup—it is to be hoped wisely, and not too well—and in the morning we wake to the sober but delightful fact that we are qualified men.

And then! What then? Then, you say, we enter private practice. And then? Why then, you say, if we have succeeded in our examinations at the college, why should we not succeed without any question in practice? It does not follow. Why not? I will tell you why, and in so doing, I will try to answer my third question. My second question, you may remember, was, "What are the qualifications required in order that we may practise properly?" And my third, "What are the qualifications required in order that we may practise successfully? You observe that in both questions I use the word "qualification" in the sense of general fitness rather than in the narrower sense of diploma or degree—a subject I am not touching upon now; and you may also observe that the only distinction between the two questions lies in the difference between our fitness to practise properly, and our fitness to practise successfully. For, as a matter of fact, a very serious matter of fact it may be to some of us, we may be well qualified to practise properly without being qualified to practise successfully. To practise properly, legally, to know under given circumstances what to do, and to possess the skill to do it—this is provided for by the training which we have just been considering, and which terminates in our acquisition of a dental diploma. But it is one thing to be able to treat our patients properly, and quite another—is it not?—to have patients to treat. How is it that one man succeeds in building up a good practice, and another fails to do so, although both may be placed in similar circumstances and have equal opportunities?

I am not speaking of the idle or the vicious man. I am speaking of the man who, with ability and honesty of purpose, yet fails, and, in some cases, fails dismally, to attain to a successful position, to a position which his neighbor attains, although the latter may be no more abler or more honorable than the former. Now we cannot account for all cases. There is the element of chance, of fate, of bad luck—call it what you will—that seems to dog the steps of some men; it is inscrutable, and not to be accounted for. But there are many cases that we can account for. Let us return for a moment to our actor. Let us suppose that he has undergone a rigorous training, so far as the learning of his speeches is concerned. Let us suppose him to be—to use the stage phrase—"word perfect." Question him in this or that passage; as to this or that cue, or entrance or exit. He answers all your questions quite correctly. You catechise him on the subject of costume, or on the choice of this or that weapon or property suitable to such and such a part, or period. He doesn't make a single mistake. "What an admirable Crichton," you exclaim. But the question is, does it follow from this knowledge, peculiar and extensive and useful as it is, that your actor is successful when he comes into the glare of the footlights and faces his audience? To know his part is one thing, to play it is quite another. And you know quite well how many an ambitious and well-meaning aspirant to histrionic honors has ere now been hooted off the stage, not because he forgot a single word that he had to utter, but because his delivery, his bearing, his gait, his gestures were ridiculously inappropriate to the part he was attempting to render; because he lacked the necessary power of characterization; because, above all, he lacked the one thing needful—the genius to throw himself into the spirit of his part.

Now, your qualified dentist may, and sometimes does, find himself in a position exactly analogous to our poor actor. He has his knowledge and his skill, his trained mind and his trained fingers. But what about his bearing, his attitude his behavior? He knows his part: how does he play it? If he is to play it aright, if he is to receive the plaudits of his audience, he must possess certain qualities which no examination can guarantee, and the possession of which must depend more on the man himself, his upbringing, his *nous,* his attitude towards men and things far more than on any concrete teaching that he can receive from others.

What, then, are these qualities, so essential to success? It is somewhat difficult to put them into words, but so far as the attempt can be made, I must make it. I shall try to be quite brief. In the first place, business habits are essential. It would seem scarcely necessary even to mention such an obvious thing, were it not a fact that so many professional men seem blind to it. It might even appear as if they thought that the more unbusinesslike they were, the more professional they became. Nothing, of course, could be further from the truth. Punctuality, method, promptitude, courtesy, above all, absolute accuracy and exactitude in money matters—these are looked for, and are valued in a professional man, and every practitioner who fails in these, so far fails in the *rôle* that he has taken up, and so far will he fall short of the success that he desires.

Another thing, or set of things, that is looked for and valued and appraised by those who seek our services, is the house that we work in, and the way in which our rooms are kept and ordered. A man of right instincts, of gentlemanly feeling, of good taste, will exhibit those instincts, that feeling, that taste not only in his personal behavior, but in his immediate surroundings—his house, his furniture, his arrangements for his own and his patient's comfort. This is instinctively, if not consciously, felt by those who come to consult one. And, if instead of order, and neatness, cleanliness and comfort, they find about the house untidy carelessness, dirty walls, dusty chairs and tables, slovenly servants, they, to say the least, are not encouraged to think of the man who occupies that house (or those rooms) as one whose habits and tastes are attractive. You may depend upon it that a bright, well-ordered house, with a comfortable, prosperous air about it has its effect and its deserved effect. A gloomy house, or one with a shabby, uncared-for look about it, prompts such thoughts as these, to him who visits it. —A patient says to himself: "This man is not succeeding, he does not expect to succeed, he is making no effort to succeed, I shall get out of his hands, or, at any rate, I shall take good care not to send anybody else to him." You must remember how easily human nature is impressed by external things, and, whilst avoiding the meretricious glitter of the quack, or the vulgar luxury of the "bounder," you should display the quiet, solid good taste of the educated man.

This holds good, too, in the matter of dress and personal habits. It is a point unnecessary to dwell upon at any length; for if it is inconsistent with gentlemanly feeling to live and work in an untidy, comfortless, shabby house, it is much more inconsistent, surely, to dress untidily, or to be anything but spotless as to cuffs or collars, or to forget that, modern surgery demanding aseptic instruments, it is desirable to keep the most important instruments we possess, I mean our digital extremities, free, at least, from those adventitious accretions that the vulgar describe as "dirt."

But let us pass now to that which is more essential to true success than even business habits, and the surroundings and well-ordered economy of a gentleman. What of the gentleman himself? What of his bearing, his manners, his behavior towards his patients, his way of treating them; not simply as an operator, but as one to whom they come as to a man who has it in his power to help them, and who may help them either in a grudging, mercenary, unsympathetic way, or in a way quite otherwise?

It is just here, as it seems to me, that the most interesting part of our students' *rôle* comes in. He who has to deal with men, and whose success largely depends on his power of dealing with men, getting into touch with them, inspiring them with confidence, winning their respect, there is some interest, there is some excitement in playing such a part. And it is well for us if, in our hospital days, we realize that our *rôle* is thus not only scientific, but humane. For hospital work is capable, if we choose, of doing more for us than to make us brilliant operators, exact, precise, with a touch at once firm and delicate in handling minute instruments and dealing with the most sensitive of tissues. Hospital work does not merely teach a man how to treat diseased conditions of the teeth; he may learn there, if he will, how to treat men and women, how to treat them in the sensible, cheerful, kindly way that is so much appreciated by one's fellow-men, especially those who are suffering and miserable and whose condition calls for firmness combined with sympathy and tact combined with honesty. To some of us these precious qualities come naturally, to some they come hardly and only by the exercise of painful effort; but we all need to be alive to their extreme importance, and we all need to cultivate them and to lose no opportunity of doing so.

"Gentleness and cheerfulness," says Robert Louis Stevenson, in one of his most charming essays, "these come before all morality; they are the perfect duties," and if this is true for men in general, it is, without question, true for dentists. With us, these things are not only desirable, they are essential. They are part of our stock-in-trade. For, if you come to think of it, who would go to a melancholy, or cynical, or sour-spirited dentist if he could help it? This does not mean, of course, that we should always be creating untimely jokes, or cutting mental capers, so to speak; still less does it mean that we should lightly ignore or gaily pooh-pooh our patient's ailment. But it does mean that we should bear in mind the sage ancient saying that "a merry heart doeth good like medicine;" it does mean that by a cheerful manner and tone one can often do very much to hearten and encourage those who would otherwise be disheartened and depressed. Give your patients confidence by your own quiet and unaggressive confidence; give them a cheery word out of the treasury of a cheerful heart; give them gentleness, and show in your conduct how many opportunities our practice affords for what Wordsworth calls the "best portion of a good man's life; his little, nameless, unremembered acts of kindness and of love." So may you achieve success, and by success I mean not only a large practice built up by honorable means, not only a good income, the fair reward of honest work: I mean other things besides. I mean such things as the esteem of patients who have experienced skilful and kindly treatment at your hands; the esteem of your fellows who know something of the difficulties you have had to meet and to surmount; the satisfaction which comes to those who feel that they have done something to earn the gratitude of those they have served.

Such success is worth striving for. Strive for it, all of you, and good luck attend you.

Gentlemen, I am grateful to you for giving me such a long hearing, and I do not propose to trespass on your kindness any longer, although my subject suggests tempting excursions into other fields. For had I not used up my time in other ways I might well have said something on that most important part of the student's *rôle*—I mean his recreations—for I yield to nobody in believing that "All work and no play makes Jack a dull boy,"—dull not only in his play, but in his work, too.

I might have dwelt, too, upon that attractive subject—the opportunities and advantages of fellowship, both in work and in play—opportunities and advantages which this and kindred societies offer so freely. I might have enlarged on the part that we are all, without exception, called upon to play, in promoting the weal and in furthering the interests of our profession. These, and other themes, are all legitimately included in the *rôle* of the dental student. But my subject is too large for one occasion, and I must stop before your patience is quite exhausted.

One personal word I may, perhaps, be allowed to say in conclusion. I stand before you—among you, I should say, and I rejoice to say it—as a member still of this Society, the Dental Student's Society of the Royal Dental Hospital, but I no longer stand before you as a member of the staff of the Hospital. It has not been any easy matter to bring myself to the point of severing a connection, let me say an attachment, that has lasted so long, and that has grown with growing years. I have been bound by many ties, and I think the hardest of them all to cut has been that which has existed between us, between you and me, and in saying " you " I think not only of you that are here to-night, but of all the students with whom I have been brought into personal contact during the past seventeen years. I cannot dwell upon this. It is not proper that I should, nor would my feelings allow it. This only will I say, that the pain which my resignation has cost me would have been much less than it is if I did not somewhat bitterly feel how much better I might, and ought to have served you than I have done.

One word more. Let me take leave of you, not in my own, but in the words of one who played a conspicuous part in the life of England during the century that has closed; words all the more weighty because they convey the very spirit of him who uttered them. " Be inspired with the belief that life is a great and noble calling; not a mean and grovelling thing that we are to shuffle through as we can, but an elevated and lofty destiny."—*The Dental Record.*

HYPNOTISM.

By Charles Gilbert Chaddock, M.D.

Hypnotism is a term derived from the word " hypnosis," which was first introduced by an Engish physician, Braid, in 1841. It is a word of Greek origin, which signifies sleep, and was used by Braid to cover a peculiar state of somnolence which he induced in certain individuals by means of certain procedures.

Braid was the first observer who attempted to investigate scientifically certain peculiar states of mind of spontaneous or induced origin, which had previously been regarded as due to animal magnetism, but he never went so far as to deny the existence of animal magnetism.

A French charlatan, Mesmer, in the latter part of the eighteenth century, made himself famous by the wonders he performed with the aid of so-called animal magnetism, and so celebrated did his work become that his name became attached to the procedures which he employed and the state of mind which he induced. Until Braid's work was published these phenomena were classed under the term Mesmerism; thus animal magnetism, Mesmerism, Braidism, and hypnotism are terms for the same phenomenon; the name has been changed with variation of the conception of the nature of the phenomenon.

Notwithstanding the scientific spirit in which Braid approached the subject, it did not emerge from the realm of mystery until more light was thrown upon it by the studies of Charcot and the School of Nancy in the seventies. Even under the searchlight of a scientific mind like that of Charcot, the mysterious subject of hypnotic phenomena was only elucidated after years of study and observation, and even at the present time there are striking differences of opinion between rival observers; which only serves to emphasize the difficulties the human mind has to encounter in forming just opinions about the phenomena of life.

It would be unjust to omit reference to an earlier observer who clearly explained the nature of hypnotic facts. In 1784 the subject of animal magnetism was brought before the French Academy of Sciences for discussion at the time when mesmerism was at its zenith of popular interest. Many were the occult and mysterious explanations offered for these remarkable manifestations. In reference to this animated search for supernatural causes, an extract from a report of Bailly before the French Academy of Sciences is worthy of citation: "In searching for an imaginary cause for animal magnetism the actual power that man exercises over his fellow-beings without the immediate and evident intervention of a physical agent, is recognized." By this you will see it is meant that the mental state of one man is influenced by the mental state of another or others, and it is a fact that it is not necessary to appeal to the supernatural to explain it. Bailly in support of his assertion had shown "that the power of man over the imagination can be elaborated to an art, at least in relation to such persons as believe in the possibility of such things." In this statement Bailly explains perfectly the phenomena of mesmerism, which was, in fact only the art of suggestion exercised upon those who were by belief or faith or prejudice in awe before the supernatural.

Mesmerism, Braidism, and hypnotism are not new. The phenomena to which these terms have been successively applied are as old as humanity itself. You all know that for centuries the fakirs of India have practised upon the credulity of a fanatical and ignorant people by means which we to-day speak of as suggestion; and we have no further to go than to our immediate neighbors to realize the potency of the wonder-worker. The travelling quack, the painless tooth-puller of the country district, is practising in our day what the fakir of India has practised for ages.

In discussing a subject it is necessary to define, if possible, its limitations; in other words, we must attempt to understand what is meant by hypnotism, hypnosis, hypnotic suggestion, etc.

Hypnotism is a general term applied to all phenomena which characterize the state of hypnosis; therefore it will be understood if a satisfactory limitation can be given to the term hypnosis. Hypnosis is a peculiar state of consciousness which manifests itself under certain circumstances, characterized by a limitation of ideas to a narrow circle within which the subject acts and out of which he cannot pass without the aid of extraneous ideas or influences which have no immediate relation to the series or circle of ideas which dominate consciousness. It should be added, to justify the term hypnosis, that the individual manifests during the time of limitation of consciousness a certain state of sleep or somnolence, but remains more or less subject to the influence of others.

The first observer who clearly stated the theory of suggestion, as it is understood to-day, was Liebeault, in 1866. He refers all phenomena of animal magnetism, so-called, to the influence of suggestion reaching the subject through physiologic avenues. His views became the starting-point of the School of Nancy, which maintains that the phenomena of hypnosis are normal, and claims that 80 per cent. of human beings can be hypnotized.

In contradiction to the Nancy School arose that of the Salpêtrière or the Charcot School, which claimed that the phenomena of hypnotism were abnormal and presented certain somatic or bodily symptoms which were characteristic and pathognomonic. While the Nancy School regarded all the manifestations of the hypnotized subject to be due to the effect of idea, the Charcot School maintained that certain physical means exercised a direct influence upon the patient without the intervention of the mind.

There flourished at the same period a belief in the power of medicines to exercise their effects at a distance. These views were maintained until his death by Luys, notwithstanding the scientific demonstration that his ideas were entirely false and that the phenomena he attributed to the influence of medicine were the result exclusively of suggestion.

At the present time the contradictions between the School of

Nancy and the Charcot School continue to exist, though some of the early elements of dispute have been eliminated, and the question has now become narrowed to the discussion as to whether hypnosis and hypnotic manifestations form a part of the disease known as hysteria, or are without pathologic significance.

In my lecture of last year, I pointed out the efficacy of suggestion as a means of overcoming pain, and showed how almost universally human beings are open to suggestion and persuasion; how our habitual beliefs and our manner of thinking are the result, in a large measure, of suggestion.

The efficacy of an idea given to another depends largely upon the mental training and habits and beliefs of the individual, as well as upon the nature and source of the idea which is intended to influence him; thus there must be great variability in the susceptibility of individuals to suggestion, though all probably are more or less subject to its influence. Probably the extravagant claims made for hypnotism by the Nancy School, in the belief that the vast majority of human beings can be hypnotized, is based upon this general fact of almost universal suggestibility; but it is a long step from mere suggestibility to true hypnosis, and in reality the persons in whom a true hypnosis can be induced make up but a small portion of humanity in general.

Before attempting to explain the nature of hypnosis, and before making any statement of its uses or abuses and possible injurious effects, it will be well to give you some idea of the means by which the condition may be induced in certain susceptible persons.

In the practice of mesmerism, so-called, sleep is induced by the belief that some supernatural indefinable influence (fluid) leaves the operator and effects the subject in such a way as to induce in him the conditions which have been predicted; for example, the operator makes certain passes in the neighborhood of the subject, all the time stating that the result will be sleep, and that in this state he will become subject to the will of the operator, performing all that he is commanded to perform and with inability to resist the commands. In order to place a subject in a receptive state of mind, certain procedures are also employed, such as fixing with the eyes a bright object, with the command that the subject is not to wink and that sleep will follow. The natural result of fixing the eyes on a given object is a burning of the eye-lids that induces heaviness of the eyes, which naturally suggests sleep, even though the idea of sleep has not been otherwise imparted to the subject. In this way susceptible persons pass into an hypnotic state. Braid was accustomed to use such means with verbal suggestion, though he believed that fixation was an essential element. Later, as has already been explained, Liebeault discovered the essential element in the idea imparted, and that all that was essential was verbal suggestion. The method now generally employed is to place the subject in a position of repose and suggest that the eyes are heavy and that drowsiness is creeping over the individual. Certain external circumstances lend weight to these ideas. It is especially effectual to place the subject to be operated upon in the presence of hypnotized or sleeping persons for the aid lent by subconscious suggestion. If a subject be influenced, he apparently sleeps, but is in relation with the operator, and may be induced to act in accordance with ideas communicated to him by the operator. In this condition, however, the subject is rarely, if ever, absolutely in the power of the operator. There is a certain limit beyond which suggestions have no power to influence the individual. Thus it is very easy to induce the hypnotized person to perform silly acts or those which are without special moral meaning, or which are not in opposition to his moral training; but even in the most susceptible hysteric patients it is practically impossible experimentally to induce them to attempt acts which are manifestly criminal, providing that such acts are out of harmony with their training and habitual attitude of mind. However, it is true that in the hypnotic state, the subject accepts ideas more readily than in the waking state, and on account of this, during hypnosis, ideas may be imparted to the subject which overcome ideas that are habitually active during the moral waking state. This makes it possible to remove or overcome certain mental or bodily symptoms which are dependent upon idea. Thus psychic pain may be removed by suggestion, and paralysis, anesthesia, contracture, etc., that have as their basis an idea, conscious or subconscious, frequently may be overcome and permanently cured by suggestion in the hypnotic state. On the other hand, by the same means (suggestion) similar phenomena may be made to appear in the hypnotic state; so that after waking from the hypnotic state the subject presents pain, paralysis, tremor, contracture, anesthesia, etc.

The hypnotic state of consciousness is peculiar in this, that it is a secondary state, or a state differing from that of moral consciousness, so that the person that has been repeatedly hypnotized comes to have a double consciousness in a sense. During hypnosis memory of the events of the normal waking state is quite obliterated; and on the contrary, in the normal waking state memory of the events during the continuance of the hypnosis is wanting, but with repetition of hypnosis there is memory for the facts of previous hypnotic states. In certain individuals this doubling of consciousness is so marked, and the two states are so distinct, that actually two personalities are created.

Since many of the writings on hypnosis still refer to the original conception of Charcot, it may be well to review the phenomena which were regarded by that observer as essential in so-called "Grand Hypnotism."

It should be stated at once that grand hypnotism as understood by Charcot was observed only in persons subject to hysteria in its most marked form. The procedure employed in general was to suggest to the patient that she would fall asleep, at the same time the operator pressed with his fingers on the eyeballs after the patient had closed the eyes. The patient passed into a somnolent state which lasted indefinitely, and in which she was not open to verbal suggestion. Owing to the apparent state of relaxation, with resemblance to sleep, this condition was called lethargy. Without interference from the operator this state would last indefinitely. In the state of lethargy, however, certain procedures produced peculiar phenomena. If the operator stroked a limb, for example the forearm, the muscles touched would become forcibly contracted. This contracture would continue indefinitely, and remain after the patient had been wakened, if pains had not been taken to remove it by some procedure—either by forcible pressure on the muscles or by blowing lightly upon them. This phenomena of contracture could also be induced by approaching a magnet to the patient.

If now (during lethargy) the patient's eyelids were raised by the operator, they remained open and the gaze fixed. The raising of the eyelids induced a secondary altered state. In this condition the patient remained fixed in the attitude which she happened to be at the moment the eyelids were raised, but this attitude could be altered by the operator, and whatever position was given to the limbs or body was maintained indefinitely; in other words, this condition was one of catalepsy. In this cataleptic state the patient was more open to suggestion, but still seemed to be dominated by a single fixed idea, or in a state of suspension of mental activity. Mainly suggestion exercised its effect through attitude, for the facial expression changed in harmony with the attitude (prayer). The phenomena of contracture evocable in the state of lethargy could not be induced here. If the eyelids were mechanically closed the patient immediately passed again into the state of lethargy, from which she could again be changed by suggestion into an apparently normal waking state, but which is an exceptional mental condition in which she is entirely subject to the will of the operator. This condition the Charcot School called somnambulism, for the reason that the patient walked, talked, and acted without special abnormality, and accepted all possible ideas from the operator; thus a hypnotized patient in a condition of somnambulism may be made to believe that she hears or sees anything which the operator suggests, and many of the bodily functions may be influenced in the same way; thus all the symptoms of hysteria may be brought into being by suggestion, such as anesthesia, paralysis, contracture, and attacks of grand hysteria (convulsions).

Charcot's study of these three states was at fault in that he failed to recognize that all three states were equally the result of suggestion; for he believed that they were characteristic of hypnosis, and that stroking, pressing, blowing, and magnets exercised a direct physical effect to induce the changes observed. However, he admitted that there were certain cases in which these phenomena did not occur, or could not be induced in their fully developed form. The similarity between lethargy, catalepsy, and somnambulism, as manifested in his patients, and certain phenomena characteristic of hysteric persons, led at once to the view that these conditions were identical; in other words, that grand hypnosis and grand hysteria were the same thing.

Out of the error which led the School of Charcot to regard certain phenomena of hypnotism to be due to the specific physical effect of certain procedures on hypnotized subjects, and the probable truth that the characteristic conditions of hypnosis are identical with those observed in certain persons subject to hysteria, resulted the controversy which has waged for years between that school and the adherents of the School of Nancy. On the one hand, the influence of suggestion was in part overlooked; on the other, namely, by the adherents of the School of Nancy, the identity of hysteria and hypnosis has been entirely ignored. This controversy has been waged especially around the therapeutic value of hypnotism. The School of Charcot has from the first been very sceptical as to the therapeutic value of hypnotism in the treatment of disease, whereas the School of Nancy has gone to great lengths in its advocacy of suggestion and hypnotism as means of cure of all forms of disease. The Parisian school (Charcot) has at no time underestimated the value of waking suggestion as a possible means to cure all disease of psychic origin, and in this respect it would seem to an unprejudiced observer that the diversity of views between the two schools under consideration were one of name rather than of nature; in fact, the School of Nancy has gradually abandoned the use of hypnotic suggestion *per se* and advocates the use of suggestion given in the waking state merely, claiming that results can be obtained which compare favorably with those which were formerly said to be possible only as a result of suggestion given during hypnosis. To-day the adherents of the School of Charcot hold practically the same view with regard to the therapeutic uses of suggestion, but they maintain the view that hypnosis, which in itself represents only the highest degree of suggestibility, is only a manifestation of hysteria, and can be induced only in those subject to hysteria; and further, that all the cures that have been reported as due to hypnotic suggestion are due to the fact that the symptoms or conditions that have been cured or changed by hypnotic suggestion are hysteric in nature.

Probably much of this difference of opinion arises from lack of identity of understanding of what is meant by hysteria.

It would take me too far to go into detail regarding the pathology of this mental disease, but it may be stated that the phenomena of grand hysteria and grand hypnosis are practically the same; in the one case the symptoms arise spontaneously; in the other they are artificially or secondarily induced.

What are the uses of suggestion in general and the uses of hypnotic suggestion in particular?

Waking suggestion, as we see in every-day life, exercises a profound influence upon the mental state of individuals, and is perhaps the most important aid to the physician in his treatment of patients, whether they are suffering with physical ailments or those due to idea. To the patient suffering with actual physical disease, it lends hope and faith, and thus enhances or favors the action of drugs that have been administered with the view to cure physical disease. Oftentimes it assists the patient through a crisis, thus giving time for material remedies to act. Such cases are not instances of hysteria in any true sense of that term.

Hypnotic suggestion can only be employed in relation to conditions that are actually hysteric; in other words, in conditions that are the result of idea—psychic. By means of hypnotism, or suggestion given in hypnosis, it is possible to overcome accidents or symptoms which have not yielded to waking suggestion; in other words, this procedure is only practicable with hysteric persons; and the fact that hypnosis in a strict sense can be induced is practically a demonstration of the hysteric condition of the individual. However, not all hysteric individuals can be hypnotized, and therefore the range of application of hypnotism is necessarily limited; furthermore, hysteric patients presenting hysteric symptoms of the gravest nature, even though it be possible to hypnotize them, cannot always be improved or cured. In many cases of this kind the symptoms can be removed during the continuance of the hypnotic state, but they return and persist after awakening from hypnosis.

The wide range of application of hypnotism, suggested by the writings of the School of Nancy, does not find support in the facts of experience; for to obtain results by this means it must be applied to hysteric persons, and only a certain portion of hysteric individuals can be benefited by it.

In addition to this limitation, there must be mentioned the possible dangers which attend the indiscriminate use of hypnotism. Since those in whom hypnosis can be induced are essentially hysteric, there is the danger of grave hysteric accidents or conditions arising during or as a result of hypnosis. In particular, a person predisposed may be so affected that she becomes thereafter subject to periodic attacks of grand hysteria, which remain refractory to all means of treatment. It has also been observed that persons frequently subjected to hypnosis become more and more easily influenced by others, until finally they become subject to auto- or self-suggestion, and thus an original condition of hysteria has been intensified or a latent hysteric predisposition has been developed into fully developed grand hysteria.

Popular and public exhibitions of wonders of hypnotism are to be most emphatically condemned; indeed, such theatrical travesties should be prohibited by law. In the first place, the hypnotist who practises the art for the amusement and mystification of the public is but rarely acquainted with the nature of the instrument he wields, and in nowise responsible for the lasting harm he may cause. But the ignorant hypnotist who plays upon the credulity of the people is no more to be condemned than the ignorant newspaper writer or reporter, and the more cultivated writer of modern novels, who employs the mysteries of hypnotism to heighten interest in his impossible. I have no doubt that many educated persons entertain ideas of hypnotism gathered solely from reading such popular novels as "Trilby" and the supernatural effusions of Marie Corelli. Such popular and unscientific presentations of a subject which at first sight seems so mysterious only serve to foster in the minds of the masses a belief in the supernatural, with all the errors and mental aberrations which spring from ignorance. Whether it be in the uncultured or in the educated, false ideas concerning the nature of mesmerism and hypnotism are in a measure responsible for many prevalent errors that afflict the world to-day. The hypnotism of the Indian fakir, which can be traced back to Persia in the person of the celebrated Zoroaster, is doubtless in large part responsible for the occultism that reigns and has reigned for centuries among the Hindoos, and which has found acceptance among some of the brightest, though misguided, minds of the Occident.

Spiritualism, as it is understood to-day, was born in hypnosis (auto-suggestion) and developed through suggestion.

Christian Science is perhaps the most remarkable monument ever erected by the human mind to celebrate the powers of auto-suggestion. It goes without saying that were the true nature of the means by which the very remarkable results of practical Christian Science understood by its adherents, such results could not in the nature of things be obtained. All depends upon faith in the supernatural nature of the means which bring about the end. If these remarkable and sometimes exceptional results had not a reverse, it would not seem absolutely necessary to attempt to destroy the delusion of which they are the consequence. Unfortunately, the devotee of an idea or theory that is believed to be of universal application must come in conflict with actual conditions and physical obstacles. Thus great harm results. The Christian Scientist, in his ignorance of the natural limits of his "science," applies his theory to physical disease, and thus throughout our country many innocent lives are sacrificed yearly to blind and unreasoning bigotry.

When one walks the streets to-day or glances over the advertising pages of the daily newspapers, he is almost forced to the conviction that the superstition and ignorance of the Middle Ages have come down to us unchanged. Fortune-tellers, clairvoyants, mind-readers, and palmists seem to have their signs in every available window. The advertising hypnotist has now developed the school of hypnotism, which does not confine its instruction to the student in attendance, but teaches the art of hypnotism by letter.

In the same category are to be reckoned certain writers on so-called mental science, who very plausibly present the thesis, convincing to the mind of one unschooled in physiology, of the actuality of mind-reading, thought transference, and mental suggestion.

I make these cursory allusions with a view merely to point out the dangers which attend the spread of errors concerning the mind and its nature; and especially because I consider that the erroneous views still prevalent with regard to hypnotism are in some measure responsible for the facility with which these errors are accepted and propagated.

In conclusion, permit me to emphasize one fact which I wish you to retain. Hypnotism is a natural, though abnormal, phenomenon. It does not depend upon supernatural influences. All the symptoms and conditions of mind which characterize the hypnotic state are subjective; that is, they belong exclusively to the individual presenting it, and its fundamental cause lies not in the influence of a second person, but in the peculiar state of the person presenting the phenomenon. If a second person can excite in a susceptible subject the phenomenon of hypnotism, it is only by means of the communication of ideas to that person by actual physical means, exactly like those we employ daily in our communication one with another.—*International Dental Journal.*

THE CONTACT POINT.

By W. A. Siddall, D.D.S., Cleveland, Ohio.

The contact point is a rather small point, but a very vital one, and has a great deal to do with the salvation of the teeth and the comfort of the patient. In spite of the great volume of literature written on the subject of contour of the teeth, it does not seem that sufficient importance has been placed upon the matter of getting and keeping the contact point.

What I have to say is not so much the result of theoretical study along this line as an expression of my appreciation of the importance of the subject and a few conclusions reached after a rather close observation extending over several years.

I do not care to take the time to preface this discussion by a history of the various methods of practice which have led up to the final adoption of the contour system of filling which has now for many years been recognized as the correct method of operating.

We are gradually finding out that the nearer we can follow the original plans of the Creator in all our operations the better will be the results, and any method of practice greatly at variance with these plans is not a correct method for us to follow. For reasons not quite clear to me, the importance of this method does not yet seem to be fully recognized and the method is not practised as generally as it should be.

We hear a great deal in these days about extension for prevention; but extension for prevention avails little unless the teeth have been sufficiently separated so that the fillings may be finished and the teeth allowed to come back together with a normal contact point. Fillings may be extended buccally and lingually and cavity margins extended cervically, but unless that contact point is maintained decay will set in and ruin those beautiful fillings, no matter how carefully made. It is wise, not only from the standpoint of making enduring work, but for the sake of the comfort of the patient, that sufficient space should be gained before placing proximal fillings.

This matter of contact, so essential in fillings, is equally so in crown work and bridges. So often we see gold and porcelain crowns placed which ought to be a delight to the patient in every way a source of continual annoyance because this important matter has been neglected.

In the normal adult mouth, with all the teeth in place, it is little short of malpractice to fill proximal cavities, especially in bicuspids and molars, so that the contact point is lost. The age of the patient and the condition of the teeth are important factors in the consideration of this subject, and right here is where a great deal of judgment is required. The only exception that I would make to absolute contact in normal conditions is in the case of a mouth where all the teeth are in place except the third molars which are just erupting. In such, an absolute contact is the better plan, but from a practical standpoint no harm would result from a *very near* approach to contact, for the crowding together of the teeth resulting from the erupting third molar would soon restore perfect contact.

Such an operation in the mouth of one well along in years would result disastrously, for the slight space thus left, having no counteracting influence, would be gradually increased by the action of food crowding in between the teeth, and the patient would have one of those distressing "meat holes." Eventually a recurrence of decay would surely take place, as well as a loss of gum tissue in the interproximal space.

We do not always, in fact rarely, have a normal mouth, so far as occlusion and arrangement of the teeth are concerned, in which to work, and here is where the perplexing part of it comes in. What to do in those abnormal conditions resulting from the extraction of teeth is not always a matter of easy solution. However where it is possible to restore a lost contact point it should be done. Often it is wise to make an exaggerated contour filling or crown to accomplish this, and in many such cases nothing that you can do will result in so much satisfaction to the patient.

Perhaps a short study of the means of gaining space in which to operate would be in order. In many cases in the anterior teeth sufficient room may be gained with a mechanical separator so that the fillings may be made and properly finished. This means is also efficient in many posterior cavities, yet the difficulties of holding and working around a mechanical separator in the back part of the mouth are such that in most instances a better way is to gain the space by previous separation. This may be accomplished in one of two general ways, depending on the condition of the teeth and the time at the disposal of the patient and the operator: First, by a reasonably quick separation by means of tape, cotton, cotton and sandarac and occasionally rubber. The other way is the one first suggested, I believe, by the late Dr. Bonwill, and is accomplished by packing cavities with baseplate gutta-percha. A very considerable space could be gained in this way where there are occluding teeth, without discomfort to the patient, in three or four weeks. It is often desirable to let the gutta-percha remain for some months, and this can be done.

And right here I want to enter a protest against fillling such cavities temporarily with cement. Only in rare cases is this justifiable. More comfortable, serviceable, and sometimes more durable, temporary fillings can be made with hard gutta-percha without jeopardizing the interproximal space, and when the time comes for permanent work you have gained the space necessary for restoring the normal contact point.

In making crowns, sufficient attention should be given when making the band, so that when the crown is finished and placed in position on the root the contact points are properly restored. If the finished crown is found to be deficient in this respect the difficulty can easily be remedied by melting a sufficient amount of solder on the proximal surface of the crown at the proper point. In porcelain crown-work the same thing may be accomplished by fusing onto the crown a little of the porcelain body.—*Summary.*

Reviews

Dental Metallurgy. A Manual for the Use of Students and Practitioners. By CHARLES J. ESSIG, M.D., D.D.S., formerly Professor of Mechanical Dentistry and Metallurgy in the Dental Department of the University of Pennsylvania; and AUGUSTUS KOENIG, B.S., M.D., Demonstrator of Metallurgy in the Dental Department of the University of Pennsylvania, and Assistant Demonstrator of Histology in the Medical and Dental Departments of the University of Pennsylvania. Fifth edition, revised and enlarged. Illustrated with 76 engravings. Philadelphia and New York: Lea Brothers & Co. 1904.

The call for a fifth edition of this work so soon after the publication of the fourth, is evidence of the value of the work and the importance of the subject to the profession. It is not many years since the study of this subject was introduced into the dental colleges. Why it should not have been considered essential for so long is not easy to explain. Almost the whole of a dentist's time is spent in the handling of metals, the properties of which he should know. Dr. Essig's "Metallurgy" has had no small part in bringing the importance of this subject to the notice of the profession.

Normal Histology. By EDWARD K. DUNHAM, Ph.B., M.D., Professor of General Pathology, Bacteriology and Hygiene in the University and Bellevue Hospital Medical College, New York. Third edition, revised and enlarged. Illustrated with 260 engravings. New York and Philadelphia: Lea Brothers & Co. 1904.

This is a book of over three hundred pages, well bound, well printed and profusely illustrated. The author has a grasp of the essential principles of teaching, and has arranged the contents of his book in accordance with those principles. The subject is arranged and presented as subsequent to a knowledge of physiology, believing that the student should have a knowledge of the function of a part before he is asked to study its minute histology. How much more rational is this method to the one in common use of studying the minutiæ of a given tissue without knowing either where it comes from or its use. Rational methods of education will be forced upon the unreasoning teachers after a while. The value of a book to a student is useful in proportion as its teachings are in accordance with mental tendencies. A mere listing of facts does not make a text-book, as is so often seen in this and other akin subjects. The book before us has more merit than any other we are acquainted with.

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The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

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EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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DENTISTS ON THE UNIVERSITY SENATE.

Some time ago we took occasion to look up the subject of representation on the Senate of Toronto University. It was shown then that dentistry, pharmacy, music and agriculture were not represented. The publication of the results of the recent elections held by that body has again called it to mind. There can be no possible reason why the dental profession should not be represented on the University Senate. High School teachers have two representatives, while they cannot in any sense be called graduates of the University. True, they represent an important educational body. To ask for representation is not bold or obtrusive; it is a right. If the dentists of Ontario are permitted to be graduates of Toronto University, they should have equal rights and privileges with graduates of other departments. If representation were asked for by the graduates, it would certainly be considered by the University and by the Legislature. There ought to be some authoritative dental body in Ontario whose privilege it should be to have the dental graduates of the University represented on the Senate. Surely there is a graduate who will take this up for the benefit of his profession.

THE FOURTH INTERNATIONAL DENTAL CONGRESS.

The attendance at the Fourth International Dental Congress, held at St. Louis, August 29th, 30th, 31st, and September 1st and 2nd, 1904, was not very large. There were about fifteen hundred registrations, this being about three hundred more than attended any former international congress, and about twelve hundred less than attended the Odontological Clinic in Chicago in February, 1903. There were many factors which interfered with a large attendance; chief among them were the disagreement among the officials and the possibility of excessively hot weather. The former acted very materially in some localities, while in others it had much less influence; the latter had greatest influence in the northern latitudes.

The meeting was held in the old Coliseum Building, which is a tumble-down old rookery. One would expect to see bats or owls awakened from the dark, dusty old walls and corridors at any time. The accommodation for the general sessions was very good. The large music hall was used for this purpose. The rooms for the section meetings were very bad. They were poorly seated, poorly ventilated, not too clean, mostly too small, situated so that members had to pass through some of the sections to get to others. The noise was so great from the street that unless the listeners were very close to the speakers and full attention given, nothing could be heard. Some of the section meetings were not attended by others than the officers. Few desire to sit in uncomfortable chairs at a temperature of 90 deg., and strain every nerve to hear a speaker above the roar of the dray waggons and street cars. Operative Dentistry Section was held in the large amphitheatre and was well attended, both because of the comforts the room afforded and the quality of the matter presented. A few papers were considered of sufficient interest to have been read before the general sessions, but, strange to say, the ones selected were not the prize essays of the congress.

If the Coliseum was not well adapted for the meetings of the various sections, it made up for it by providing the best possible exhibit and clinic rooms. The exhibits were arranged as if there had been a head to the department. One large room, with light from one side and an immense skylight running full length, supplied an excellent light. The exhibits were arranged in four rows, the long way of the room, thus providing three passages or streets. There were cross passages at intervals. Each exhibitor selected the required space by the frontage on the street, and made whatever decoration he wished. The exhibits were open from nine until six, and were well attended.

The clinic room was immediately above the exhibit room, lighted from the same skylight. The floor space was about twenty feet wide, running all the way round the well, which admitted light to the floor below. There were two rows of clinics all the way round this immense room: chair clinics in the front row and table clinics in the back row. The clinics were well managed. There seemed to have been selected patients and other necessities to supply every clinician. Each clinician worked under the number opposite his name on the programme. An officer and a stenographer went round from chair to chair and took the clinician's report of what he was doing. Altogether, the clinics were of a very superior character—no bluffers, no loud talkers, no fakirs; sincere, honest dentists, endeavoring to help others. The programme provided two half days of clinics of about a hundred on each day. They seemed to teach a sterner lesson than any other part of the congress. One could easily gather the direction or tendency of the dentistry of the day. There was a noticeable change in the kinds of clinics given. Certain sections of the country were represented by men who were performing the operations considered to be the most progressive, and other sections with equal zeal were pressing other operations to the front. But with a general survey one could notice the present ideals in dentistry as compared with those of former times. Painless extractions were made by almost every method, but chiefly general anesthesia, using somnaform or ethyl chloride. There were, of course, a few who illustrated the substitution of artificial teeth for natural ones. There was a noticeable absence of the makers of artificial crowns and bridges. A few years ago such a clinic would have been one-half on this important subject. But it seems no longer of such importance to the profession, or there are no more new things to show. This is the day of filling teeth—gold, amalgam, porcelain and gold inlays. These operations demanded the greatest attention, and were the most numerously illustrated. The preparation of cavities for gold and amalgam seems to be settled, while the preparation of cavities for inlays still demands first attention. There were about twenty or thirty gold fillings inserted each morning, using the same methods. Dr. Rooch, of Chicago, showed a porcelain body which could be packed into the cavity and then withdrawn and baked, then adding a little more, and complete in the second baking, no matrix being needed. This clinic demanded much attention. Dr. C. N. Thompson, of Chicago, illustrated a very accurate method of making gold inlays which called for much favorable comment. There were such hosts of good things shown that it is impossible to individualize. It must not be thought all the clinics were of a very high standard. There were some of the poorest operations made that your essayist ever saw given as a clinic, and some of the worst examples of dentistry. There were a few clinics illustrating how to preserve the natural teeth and thus avoid the necessity for filling and loss by disease. Gradually, but certainly, this aspect of dentistry is forcing itself on the attention of the profession.

The papers presented were not all of the same class in point of excellence. A few were reports of findings from investigations which enlarge the basis for the practice of dentistry, but the majority were re-hashes, very good and useful in their way, but not marking mile posts in dentistry. It is very discouraging to an essayist to have prepared a paper and then be asked to read it to two or three people, as occurred in some of the sections. There were too many sections.

The registration of members seemed to be a very slow and tiresome process. There was so much red tape to go through that the officers were busy for three or four days making the registrations. If each member were given a registration card to fill out as he presented, much time and delay could have been saved. The whole twelve or fifteen hundred could have been registered in as many hours and no possible chance for mistake.

The Dental Cosmos had a room which was used for a post office and information bureau. There was only one wash basin and one closet in the building, and they could only be reached by passing through a meeting room.

The social aspect of the meeting was well looked after. There was a reception in the Missouri Building on the Fair grounds on Monday evening. Tuesday, Wednesday and Thursday evenings there were fraternal and international banquets. The great banquet on Thursday evening was splendidly managed; the menu was excellent and well served; the speeches by the representatives of all countries were short and brilliant.

This is the first International Dental Congress at which Canada was officially recognized and was granted all the rights of a foreign country. At every public function "Canada" was called for and responded. The only regret is that we had not a government representative who would carry with him the authoritative appointment of the government and would have been recognized as such. Other countries had such delegates, and there is no reason why we should not have one. The next congress will be held in Berlin, Germany, 1910, and those of us who take an interest in national affairs should bring every influence to bear so that a government official will be appointed for that meeting.

DEATH UNDER GAS ANESTHESIA.

Dr. Graham, of Ottawa, very kindly gives the following facts in connection with the death of a patient while teeth were being extracted, after the administration of nitrous oxide gas. Though deaths are very few under gas, yet they do occur, and we wish here to call attention to the necessity of being prepared for such accidents. Drs. Graham and Beattie were fully prepared, and nothing was neglected that might have been of assistance. There are dental offices not so well equipped to meet such emergencies.

"The patient came to the office about 4 p.m. on Sept. 21st., accompanied by her mother and a friend, desiring to take laughing gas to have some teeth extracted. When I examined the mouth I found all the teeth in a badly broken down condition, nearly all roots and diseased. I advised her to consult a physician and have chloroform administered. Her mother would not, under any condition, have her take chloroform, and said, 'Give her the gas, and take out three or four that are troubling her most, because she is not very strong.' She said she had eaten no breakfast or dinner, and was not the least nervous. I had our lady assistant remove her collar and belt and loosen up all tight bands, including her corsets. Dr. Beattie turned out six gallons of gas, which she inhaled without a struggle, and her respirations were deep and loud, pulse seemed weak. I ceased giving the gas when she had about five and a half gallons, and she was breathing nicely and seemed to be well anesthetized. I removed two teeth, and was about to extract the third when I noticed her change color, her lips turning to a deep purple. I immediately used the tongue forceps, turned back the chair as low as possible. Dr. Beattie injected one-thirtieth of a grain of strychnia into her arm, also put liquor ammonia fort. to her nose. We have two physicians in our building, and both were on hand in less than two minutes, but respiration and heart's action, I am convinced, had ceased from the moment I went to remove the third tooth. She never moved a muscle or made a sound. The doctors injected brandy, used amyl. nitrite and the electric battery (artificial respiration for one hour). When I told her friend, who remained in the room all the time, that she was in a dangerous condition, she said, 'Well, don't tell her mother, because she has heart trouble.' Her father told me afterwards that she had always enjoyed good health, except when she was thirteen years of age, when the glands of her neck became enlarged and discharged freely. Her neck was scarred from ear to ear, but it seemed to be perfectly healed, as five years had elapsed since she had the trouble in her neck. We used artificial respiration from the time we noticed the change in color. There was no obstruction in larynx, no vomiting or struggling, and no more than five and one-half gallons of gas administered."

GOLDEN WEDDING.

Dr. Henry T. Wood, one of the most respected dentists of Ontario, celebrated his golden wedding in Cobourg, Saturday, October 15th. The dental profession of Toronto sent him a purse of gold as a token of remembrance. Dr. Wood was a member of the Board of Directors for a great number of years, and while in that capacity the profession learned to appreciate his steadfast integrity and unswerving devotion to duty. His friends wish him good health and years of happy old age.

Editorial Notes

"Men and women grow when they are rooted in reality."

"A college education is good for those who can digest it."

"You are entitled to a point of view, but not to announce it as the centre of the universe."

Dr. Charles McKinlay, of Georgetown, has been recently appointed a coroner for the County of Halton.

"I want books, not to pass the time, but to fill it with beautiful thoughts and images, to enlarge my world, to give me new friends in the spirit, to purify my ideals and make them clear, to show me the local color of unknown regions and the bright stars of immortal truth."

The Australian College of Dentistry has affiliated with the University of Melbourne. The only change will be the representation of the University on the Dental Council. The standards of anatomy, physiology and pathology will be raised to that of the University.

Let us keep our colleges and universities true to their function, which is preparatory and not final. Let us not ask of them a yearly output of "finished scholars." The very phrase has a mortuary sound like an epitaph. He who can learn no more has not really learned anything. What we want is not finished scholars, but equipped learners; minds that can give and take; intellects not cast in a mould, but masters of a method; people who are ready to go forward wisely toward a larger wisdom.

J. B. WILLMOTT, M.D., D.D.S., L.D.S.,

President of the Canadian Dental Association.

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Original Communications

PRESIDENT OF THE CANADIAN DENTAL ASSOCIATION.

By A. E. Wark,
Editor of *Hya Yaka*.

The men behind this country's development have been its pioneers. They took a country covered with forest and strewn broadcast with difficulties and dangers. They cleared the country of forest, and in spite of danger and difficulty have left for us a heritage of fields ready for the harvest and freed from the dangers they encountered. Difficulties are ours still, but we have past example and experience to guide us. History has already placed many of our pioneers on the pedestal of lasting fame. Some of them are still making history.

The history of every calling is the record of some man or group of men, and the history of the dental profession in Ontario is to a great extent the record of no man more than that of Dr. J. B. Willmott.

Born in Halton County, in 1837, a wilderness awaited his taking up the task his parents were already engaged in. Between the years of his boyhood and the year 18[illegible]4, when he entered Victoria College, Cobourg, we presume he spent his time like other country boys, extracting milk from the cows and stumps from the ground, filling benches and classes in the Public School, putting the minds of his teachers into inflammatory conditions, crowning his parents' hopes with joy by wresting prizes from his competitors in the spelling-match, learning the instrumentation of farm products with all sorts of excavators, and entering with gusto into the removal of pulps from his neighbor's orchards.

His taking a degree in arts in Victoria College, Cobourg, was prevented by ill health. In 1858 he entered the dental office of W. C. Adams, and after two years' pupilage began practice in the town of Milton. Ten years afterward he entered Philadelphia Dental College, obtaining his D.D.S. in March, 1871. In July of that year he removed to Toronto, where his time ever since has been spent in the practice of dentistry and in successful efforts to place the profession on a higher level than he found it. This was accomplished by making a uniform qualification necessary to the obtaining of a license, by legislation in the Ontario House incorporating the profession as the Royal College of Dental Surgeons of Ontario, March 3, 1868, and finally by the establishing of a school of dentistry. In every one of these steps, Dr. Willmott was a conspicuous force.

If we begin with the first session of the school, in 1875, and trace the improvements in the qualification required to enter the school as a student, we will be struck by the vast difference between the educational attainments required of men entering then and the educational equipment of a candidate to-day. In those days one had to matriculate in the R. C. D. S. Here are the subjects: Orthography, English History, English Grammar, Geography, Arithmetic, and Composition. This examination could be taken by the candidate in the cities of Hamilton, Kingston, and Toronto. Dr. Willmott was the examiner in Toronto. Contrast this list of subjects with the present curriculum for University matriculation. In July, 1878, the standard was made the High School Entrance examination, and this qualification was sufficient until the year 1880, when a teacher's third-class certificate was demanded.

In 1889 the Latin option was required with the third-class certificate, and in 1896 the standard was raised to Junior matriculation, or its fair equivalent.

From High School Entrance to University matriculation is a great stride, but it represents forcibly the progress of dentistry since the establishment of the school in 1875.

Woven into this fabric of progress and achievement—the very woof of it, in fact—is the work and personality of Dr. Willmott. Active in the incorporation of the college in 1868, he became secretary of the Board of Directors in 1870. This position he has held continuously through the thirty-four years up to the present time. The Board, which decided to try the experiment in 1875 of opening a school of dentistry, an undertaking of great moment and responsibility, began with a faculty of two men. These two men have guided the school from its inception, and are still active—Dr. Luke Tesky and Dr. J. B. Willmott.

The latter filled the chair of Operative and Prosthetic Dentistry. These subjects have been taught by him to the hundreds of graduates of the R. C. D. S. who have gone out into the highways and byways of Ontario, and some of them to far distant lands.

All of them, whether they listened to the lectures in the present handsome building on College Street, or in one of the meaner buildings in less favored locations of the city that gave shelter to the earlier labors of the school, must associate the subject of our sketch with all stages of their professional education.

These recollections will bring to the older practiti[illegible] man in the noon of life, and to the recent graduate a man in the lengthening shadows. But it is still early evening with our worthy dean, and there remains for him the satisfaction of a long career of effort, crowned with a success which he must feel to be, and which many hundreds of the men of his profession in Ontario and elsewhere acknowledge to be, most complete.

CANADIAN DENTAL ASSOCIATION.

(Continued from October issue.)

The President.—It is now my pleasure to introduce to the Association my esteemed friend, Dr. R. A. Reeve, Dean of the Medical Faculty of Toronto University. He will address a few words of welcome to the Association on behalf of the University.

Dr. R. A. Reeve.—Friends, ladies, and gentlemen,—On behalf of President Loudon, who is unavoidably debarred from being here to-night, and who, I may say, is at this moment executing official duties, I have the pleasure and the honor of welcoming you, the members of the Canadian Dental Association, to the University of Toronto. At first sight, it seemed a little odd that the Committee should desire to have any of the University buildings, or should require to have one of them, because we know that the Royal College of Dental Surgeons has a splendid home near by Queen's Park, with most admirable provision in the way of capacity, and, I may say, with facilities unsurpassed for instruction, and we therefore concluded that there must be some special reason for the desire to meet here. I presume that your President was optimistic, and trusted largely to the members of your profession coming out in large numbers, as your Association covers this broad land from the Atlantic to the Pacific, and he feared that there might not be ample accommodation in the lecture-room of the Royal College for the large number who would come. Now, whatever may be the reason, I may say, and I am sure it is hardly necessary for me to say, that the desire of the Committee was most gladly acceded to by the University authorities, and as a representative of the Medical Faculty, I have, of course, special pleasure in recognizing the fact that the new Medical Building has ample accommodation and provision for a gathering such as this, and I trust that the facilities which may be found here will tend to promote the success of this important gathering. I may be pardoned, Mr. President, if just at this point I call the attention of the members of the Association to the fact embodying the principle of laboratory instruction, which emanated from Hartford. It was, of course, most natural that, in desiring to come within the precincts of the University, this Association should prefer the building of the Medical Faculty. I may say, sir, that we recognize your profession as a part of the greater body, the medical profession, and we rejoice as medical men in the progress that you are evidently making in the elevation of your standard, and in your success generally. It is certainly stimulating to the medical profession to find that you now require a four years' course. There was a time, not so very remote, when the majority of the members of the medical profession considered that four years was ample time in which to cover the necessary tuition for the young medical student. But when it was seen that it was thought necessary that a period of four years should be covered in the preparation of the dental surgeon, then, of course, it was felt that an additional year should surely be required in order to equip a member of the medical profession properly. The function of the University is, of course, to promote the cause of higher education and research work, and original investigation generally, and on that account the University should be the more ready to show practical sympathy with an Association of this kind; and also, when we find the large numbers of men of experience and years in active practice, together with the scholarly teachers in the various colleges, becoming, for the time being, students again and meeting together to exchange notes, to record their achievements, and also to listen to those who may have something new to reveal. If there were any other reasons for practical sympathy on the part of the University in connection with this gathering, it would be in the fact that, affiliated with the University we have the teaching body, or college proper, of the incorporated body of the Royal College of Dental Surgeons of Ontario, which is a source of strength to the University, by virtue not only of the numbers who attend it, but by the influence which they exert. It is only necessary to take a glance at your programme to convince one that the skill and general ability which have brought your profession to its present high position, are still in force; and, in this connection, one notes with pleasure that you have with you members from abroad, from the United States, Quebec, Manitoba, and the various provinces of this great Dominion. This, of course, exemplifies what goes without saying, that science and art are cosmopolitan, and that there are no boundaries to culture. To a cynic it might seem strange that the educated and progressive men in the various provinces are wont to meet annually or biennially in conventions and gatherings of this sort in order to gain more information, and to delve more deeply into the mystery of their profession. If Hippocrates and Galen, or some of the other ancient worthies, should to-night arise from their long sleep, they would certainly rub their eyes, and would probably say, and would perhaps have some justification for saying, "Don't you know everything yet?" It is, of course, a long time since these worthies lived on the earth, but they found out truths and proclaimed them, that in spite of the passing centuries, are facts and truths yet. But, of course, knowledge grows, and, I trust, as representatives of the University, that on this occasion some of the members will make this gathering memorable by the revelation of some great discovery or some new process, and that this will be an historic meeting. I have very much pleasure, gentlemen, in recognizing in your President the honored Dean of the Royal College of Dental Surgeons. (Applause.) I am sure, without any flattery whatever, because I do not believe in that, I express the feeling of not a few of the graduates of the Royal College of Dental Surgeons who are here, when I say that we hold in high estimation the sterling qualities of the worthy Dean of the College and of your President. (Applause.)

THE PRESIDENT.—I want to read a telegram which I received a few minutes ago: "Chicago, Ill., September 6th, 1904. Dr. J. B. Willmott, President Canadian Dental Association, Toronto. Greetings to the Association. Best wishes for successful meeting.—C. N. Johnson." (Applause.) Dr. Johnson is a Canadian, and has made a name for himself not only in Chicago, but throughout the entire American dental world, and he has never forgotten that he is a Canadian. It always affords him pleasure to recognize any of his old associates when it is possible for him to do so, and the sending of this telegram is simply an illustration that he has even the Association meetings in mind, and I think it was very kind of Dr. Johnson to remember us by sending his greetings by wire.

I want to announce somewhat of a change in the programme for to-morrow morning. In consequence of some of the gentlemen whose names appear on the programme not being able to be with us until Thursday morning, we propose to take up the items set for half-past nine Thursday morning, namely, the papers of Dr. Godon, of Paris, France, and Dr. Frank Woodbury, of Halifax, to-morrow morning, and the items set for to-morrow morning at half-past nine on Thursday morning at half-past nine. It is just possible that it may be found expedient to change Dr. McDonagh's clinic from four o'clock to-morrow afternoon to eleven o'clock Thursday morning, but that will be a matter for consultation.

DR. THORNTON.—I would move, and Dr. Shannon has kindly consented to second the motion, that this convention wire to Dr. Johnson, of Chicago, their thanks for his kind greetings, and expressing to him the pride we feel in the very high position to which our countryman has attained in the American world in the profession.

DR. SHANNON.—I have great pleasure in seconding Dr. Thornton's motion.

THE PRESIDENT.—It is moved and seconded that this Association telegraph to Dr. Johnson, of Chicago, its appreciation of his kind remembrance and greetings, and to congratulate him personally upon the prominent position he has gained for himself in American dentistry. Carried.

THE PRESIDENT.—I am sure that we all feel very much pleased with the words of welcome which the worthy Dean of the Medical Faculty of Toronto University has extended to us this evening. Let me repeat what I have already said, that we all very much regret the oversight of the medical schools of Canada in not having upon the faculty of any of them a man who has special knowledge of the condition of the oral cavity, and its relation to the acquisition of disease. If the Doctor had been here, I was going to submit the whole matter to his careful and earnest consideration. In the better class of medical schools in Great Britain and the United States they have already made such an appointment. If a proper individual occupies the chair, the instruction given will not only add to the information and satisfaction of the student, but, I think, will also result very decidedly to the advantage of the patient.

DR. REEVE.—I will certainly acknowledge that we have no lecturer in the college proper, but we certainly have three or four men lecturing upon diseases of the throat, and I am very sure they include them all, for I know they operate. They do not, of course, trench upon the special surgery that comes within your province—so that perhaps we are not as guilty as the worthy President thinks. It is certainly very gratifying to know that in Great Britain, and, as the President says, in the United States, very special attention is now given, and, indeed, that there is a special course and lecturers on this subject. I know there are such in the reorganized University of London, as I became aware last summer when across the water, and that special attention is being given to this department amongst the medical faculties.

PRESIDENT'S INAUGURAL ADDRESS.

By Chas. E. Pearson, Toronto.

Members of the Toronto Dental Society,—Greeting, and my best hope and highest wish and aim is to guide these meetings through another year of success.

Unlike the historic and immortal Wolfe, I would rather take Quebec than be the author of Gray's Elegy, or an inaugural address. Inaugural addresses are usually tolerated, but generally disappointing; so, I say, I would rather take Quebec.

Still, a little practice in the presidential chair, with all the perquisites, may be of value for some future occasion, so we shall leave the citadel for the present, embrace the opportunity at hand, and give you the skeleton, the dry bones, of what should be, as though the day were so hot we had left the flesh off to keep cool.

An inaugural address must necessarily flatter its audience for the honor it has conferred upon its all unworthy President-elect, and then make a few brilliant and clever remarks expressive of the overpowering pleasure it gives one to engage in the difficult task of guiding so intellectual and energetic a body of fellow beings in the paths of their chosen labor and research.

After which, extend the right hand of fellowship to the newly-elected; tell them of the great moral and ethical benefits to be derived by faithful attendance to all society meetings; tell them of the delightful experience meetings; of the addition to their annual income derived by the midnight oil and feverish hour on society papers; tell them how charmed we all are to see their bright young faces, and how the status of the profession is elevated by their incoming—if they stay with us.

Following this is the pabulum, the meat to the hungry, which consists of a long and delicate array of scientific and decidedly original gleanings from the laboratory of the deep-in-thought, proving that blue is not green, and doing it so skilfully that we are persuaded; or this main body of the address might tell us how progressive we have been in the past, and that we must necessarily continue so for at least a few years longer. A line of severe and strenuous labor could be arranged for the coming season, but fear that the members would meet disaster in the rush to get first choice restrains me. The dental literature of the past year would be a most entertaining and valuable effort, but a president is supposed to leave some work for his fellow-members, so I shall not tell you that scientific research, in all the branches of our profession, is stimulating our confreres across the line; we never indulge in those things.

There are other lines of thought which an inaugural address might touch upon, coming to a close with a few well-chosen words of commendation for the work done in the past, and of hopefulness for the future; but as I said in the beginning, I would rather take Quebec.

These few remarks I present to you as an evidence of my love and esteem, and they are now open for your discussion.

SOME THINGS A DENTIST SHOULD KNOW TO PRACTISE OPERATIVE DENTISTRY.

By A. E. Webster, M.D., D.D.S.

Read before the Elgin Dental Society, St. Thomas, Ontario.

Without going into the time-honored, historical introduction to a subject, I wish simply to call your attention to the constantly changing conditions of living, and the consequent changes demanded in the practice of dentistry. The time was when a dentist's skill was gauged by his ability to successfully extract teeth. Such skill to-day, though very often useful, is not at all essential to be esteemed a competent dentist. While ignorance exists there will be teeth to extract, but not by the mouthful as in the past.

The present tendency of all civilization is to make life more happy and death more comfortable. Whatever makes life more pleasant is hailed with delight. There was a time, however, when suffering and persecution were courted, that life might thus be made more perfect. Occasionally such people are still met with, to the great detriment of their associates and neighbors. They believe that whatever diseases they may chance to have are all for the best. Such beliefs are the stumbling blocks of progress.

For centuries the medical profession has had to fight against this and other superstitions. Though it was shown decades ago that diseases are transmitted from one person to another, yet there are people to-day who believe that even smallpox is a God-send, and that boils and alveolar abscesses must be good things or they would not have been sent. They even argue that the flow of pus is evidence of the value of the abscess, becauses it purifies the blood. Can we wonder, then, that in the face of all this religious superstition, that scientific progress is slow? Is it to be wondered at that we still have charms for toothache, and that occasionally we hear of dentists who have secret methods and processes, revelations as it were.

It is said that "we are a part of all we have met," but we are more: "We are a part as well of all that has gone before us." Both religious and medical folklore are handed down to us in abundance, and it is the duty of the educated to sift these things out from the truth. The man who is not laying a broad foundation for his practice is not capable of distinguishing the real from the false. The dentist who is not able to reason, and come to a sound judgment on the facts of a given case, is not likely to be esteemed an educated man by his clients, nor capable of giving his patients the best service. The advances that are being made in general medicine, surgery, bacteriology, pathology, physiology, histology, mechanical engineering, electricity, electro-therapeutics, sanitation, prophylaxis, and preventive medicine, and fine arts make it necessary for every dentist to keep on extending his knowledge. The man who fails to do this will one day wonder why it is there is a falling off in his practice. In this age of everybody knowing a little of everything and a great deal of something, the dentist must not slacken his pace for a moment. There are so many collateral sciences and arts in the practice of dentistry that keeping alert is the only safeguard against an unhappy old age. All kinds of information are spread among the people; they communicate with each other in a thousand ways. A dentist in Switzerland finds a blue light prevents pain, and the world knows it in a day. A new porcelain body is shown for the first time at St. Louis a few weeks ago, and two weeks later my patient says to me, "Have you tried that new porcelain filling material shown at St. Louis?" Daily papers, magazines, and pamphlets are scattered over the country every day containing the latest discoveries in the arts and sciences. Our patients read them, and as a consequence demand a wider education and better service from us.

In this connection let us consider for a few moments the influence the study of bacteriology has had on the public mind, and how helpless the dentist is who has not a knowledge of this important branch of operative dentistry. Bacteriology and pathology are the very basis of the practice of this part of our specialty. It surely cannot be expected that we will go on for ever filling teeth as a means of preventing decay, nor extracting loose ones as a means of curing interstitial gingivitis, or standing by and watching erosions take place and irregularities develop. It has been demonstrated on every hand that the filling of teeth has reduced the necessity for artificial dentures, and it will be as certainly demonstrated that prophylaxis and oral sanitation will reduce the necessity for filling. What, then, is the duty of the practising dentist, and especially the teacher? It is to so broaden his education, and have such a knowledge of these subjects that he will naturally fall into line with the great friends of humanity whose object is to prevent disease, rather than cure it. This is the true mission of the doctor.

Bacteriology in the Public Mind.

Dentistry has advanced to such a position that it cannot afford to be behind its allied professions and sciences; besides the publications of the day every physician and every teacher in the land is giving instruction in the relation of bacteria to disease. The sick are segregated, and the children are taught not to drink from the same cup or chew the same gum. Houses are fumigated to destroy bacteria. Butter and cheese-makers, fruit canners, fruit growers, and stock raisers, are instructed in the subject. There is public inspection of bakeries, candy factories, outbuildings, wells, stables, closets, and immigrants, all with a view of preventing disease. The dentist who says that a knowledge of bacteriology is of no value to him does not realize how much others know of the subject, nor does he realize that his patients are measuring his abilities in his profession by what he knows of the subject that everybody must know something about Bacteriology, is so essential in every walk of life that it must not be thought that patients do not recognize the methods of sterilization in a dental office; and the methods of sanitation exemplified in heating, lighting, sewage, decoration, and furnishing.

Bacteria in Decay of Teeth.

Besides these reasons for having a good general knowledge of the subject, the dentist should have a knowledge of the special portions pertaining to his practice. The first real step toward the treatment and cure of any diseased condition is to know the cause. So the first real step made in the treatment of caries of the teeth was when W. D. Miller proved that caries was caused by bacteria. The next step was made by Black, when he pointed out why teeth begin to decay in certain locations, and seldom, or never, in others. Knowing that bacteria caused decay, and that they only developed on locations on the teeth where they were not disturbed, it was an easy step to the proper location of cavity margins, and to prophylaxis, as described by D. D. Smith. Caries of teeth is treated by the dentist in direct accordance with his knowledge of bacteriology. If he knows nothing of bacteriology, he must extract teeth to prevent decay, as was practised not forty years ago. If he knows that vegetable matter cannot grow without oxygen, and knows that bacteria are vegetable matter, he likely knows that a filling will stop decay in a cavity, but unless he knows more than this the filling will not prevent decay about the cavity. If he knows still more, he will not do as our worthy dean has often remarked as being common practice forty years ago, "find a hole and fill it;" but he will so study the constitution of the patient, and the tendency to caries in all the teeth, and the one under consideration in particular that he may know how to so shape the cavity, and define its outline that not only will decay be prevented in the cavity, but also around its margins; and if he knows still more of the habits of development, growth, life, and death of these vegetable organisms, he will not only give his attention to preventing decay in and about cavities, but he will also take steps to prevent caries beginning on any other surface of the teeth, and in this way prevent alimentary infections and general diseases as well. This is the highest ideal of the dentist. This is what the study of bacteriology is leading to. Is it not clear to anyone that a knowledge of bacteriology is essentially the foundation of the modern treatment of caries?

Bacteria in Soft Tissues of the Mouth.

The present knowledge of bacteriology has shown that a decayed denture cannot be left close to a pulp, though a filling is placed over it without endangering the vitality of that pulp. It has also shown the cause, and indicated the treatment of putrescent pulps and alveolar abscesses. Before the days of modern methods of disinfection, the " gum boil " was hailed as a haven of safety. In those days it was a good thing to have pus exudations, even though they had to be swallowed. Occasionally we still see the safety-valve bored through the side of the tooth, just under the gum, as an indication that the dentist does not know bacteriology. Even ten years ago I heard good honest dentists doubt the possibility of successfully treating alveolar abscesses, while to-day he who cannot do such operations is strictly out of date. Without bacteria there would be no caries, no cavities, no toothache, no dead or putrescent pulps, no alveolar abscesses, no fistulæ, no dead bone, no constitutional disurbances, and no deaths from pus infections—practically no operative dentistry. Hence the study of bacteriology is of first importance. The practice of operative dentistry of to-day is surely not " finding holes in teeth and filling them." It has a broader and more scientific foundation.

Bacteria in General Health.

As suggested in a preceding paragraph, the dentist must know something of bacteriology, so that he may be able to diagnose and treat local infections of the mouth, and know their effects on the general health. Bacteriology has shown that almost all infectious diseases enter the body through the mouth; and also that if the mouth be properly treated and cared for, that there is less likelihood of general infection. Such diseased conditions as rhinitis, otitis, otitis media, laryngitis, tonsillitis, bronchitis, pneumonia, pleurisy, tuberculosis, gastritis, glossitis, meningitis, and all contagious diseases, such as measles, whooping-cough, scarlet fever, and diphtheria, have their beginning, or entrance through the mouth. The mouth which has many decayed lame and sore teeth, and several cloaca emptying pus into it, has all the elements in it to collect food for bacteria, and be the origin of any or all of the diseases mentioned. Consider for a moment pyorrhea, which is the cause of the loss of more teeth than all other sources combined. The disease has its origin in uncleanliness; it is continued because of the same. Pyorrhea, like irregularities of the teeth should not be allowed to develop among regular patients of a good dentist. It ought to be treated before it begins. Patients should be so instructed in the surgical cleansing of the mouth that such diseases could not begin. But think of what it means to the general health to be sucking and swallowing pus from about the roots of teeth for weeks, months and years. It is really a God-send that these teeth loosen and fall out, if they only do so before chronic tonsillitis, tuberculosis or gastritis are forever fastened upon the patient. No patient, however robust, can swallow pus for years, or absorb it from pus sacks, without at last succumbing. The effects of an unclean mouth are often remote and not suspected by the physician, but should be recognized at once by the dentist. Quarts of medicine have often been administered only to float past the real source of the disease. Poor mastication is better than the swallowing of pus. Do we think seriously enough of the consequence of acute pus infections about the mouth. Alveolar abscesses are common, but none the less painful or bereft of sad consequences. Death is not at all infrequent. The loss of many teeth and large portions of bone are common. Patients are prostrated for days or weeks. The muscles often contract so that food cannot be taken, and remain permanently so. Surely these are not trivial affairs. They at least do not at all contribute to happiness. These conditions cannot surely be treated with any intelligence without a knowledge of bacteriology. Even at the risk of wearying you I have, I am sure, convinced you that a knowledge of bacteriology is essential to the practice of operative dentistry.

Although a knowledge of bacteriology is at the basis of the practice of all modern operative dentistry, surgery, and therapeutics, yet there are special features of these latter subjects which are essential to the dentist. No surgeon could proceed on a knowledge of bacteriology and pathology alone. He must know the anatomy of the parts he operates upon. The average dentist is not called upon to do major surgical operations, but he is continually doing minor operations, which demand fine technical skill and a knowledge of general surgical principles. There is no difference in principle between the removal of an impacted cuspid, or third molar, than the removal of the whole maxillæ. It is only one of degree. The patient must be prepared, the part prepared, instruments and hands cleansed, incisions made, bone cut, hemorrhage staunched, and wound treated afterwards. Roots of teeth must be amputated, antrum opened into, excessive gum tissue cut away, abscesses incised. Every dentist is called upon to do one or more of these operations from day to day, and can he do them without a knowledge of anatomy, principles of surgery and therapeutics? In connection with these minor surgical operations and the major one of extracting many teeth, an anesthetic must be administered, sometimes local and sometimes general. No person is justified in taking the risks of administering an anesthetic unless he has a knowledge of general medicine and the technique of administration. It does not seem right to give an anesthetic to a patient unless the possibility of a heart, lung or kidney lesion has been at least suspected, and also complete preparations for an accident have been made. Deaths occur under both gas and cocaine, and we should be prepared. A death under gas has been recently reported from Ottawa. The dentists of the future must know more and more of these subjects. As we said before, the general knowledge of the public demands it. The responsibility is upon us, and will be greater and greater as time goes on. Those of you who have been in practice, even only a few years, notice that there is a demand for a wider knowledge than formerly. No dentist to-day can get along without knowing how to allay pain, either by local or general methods, and in doing this he must know the principles of both local and general therapeutics. He must also know all the conditions that might possibly cause pain about the head or jaws. He must make a diagnosis and suggest a remedy. This is general medicine. Few of us realize that a knowledge of general medicine is so essential to the practice of operative dentistry.

Physiology in Operative Dentistry.

It has been said by the thoughtless that a knowledge of physiology is not of much value to the dentist. Most students and many practitioners say they have no use for physiology; what they want to know is how to fill teeth. Now how can teeth be properly filled by a man who does not know what teeth are for, nor what functions they perform in the whole animal economy? How can he preserve, care for and keep in a normal condition organs which he does not know anything about? Every deviation from the normal, in both general and local conditions, is reflected in the secretions and the mucous membrane of the mouth. Unless the physiological conditions are known and understood, how can the pathological conditions be recognized? How can normal occlusion of the teeth be maintained, or restored, without a full knowledge of physiological occlusion. Each tooth has a definite function, and each arch likewise. Every tooth has a definite shape and occludes in a definite way so that it may perform its proper function. How can a dentist maintain these conditions if he does not know the minute anatomy and physiology of each tooth, and all the parts about them? He must know what forces cause the teeth to develop in normal relation before he can even guess what may cause an irregularity. The operative dentist should recognize developing irregularities and apply the remedy early. In short, it is just as impossible for a dentist to give his patients good services without a knowledge of physiology, as applied to orthdontia, as without a knowledge of how to make a filling. The basis of orthodontia is a knowledge of the physiology of normal occlusion, and the basis of the prevention of deformities of the mouth is orthodontia. Without a knowledge of both these subjects how can the operative dentist recognize developing deformities? It must be clear to anyone that a knowledge of physiology for this one department alone is essential.

Dental Anatomy and Histology.

Dental anatomy may be defined as topical and deep. A knowledge of the surface anatomy of the teeth is essential, first, in the identification of teeth in the months of children that mistakes may not be made in extracting permanent for temporary ones. Second, that the exact form of each tooth will indicate the proper contour and form for fillings. Third, that artificial crowns may be made to simulate natural teeth. Fourth, that bands for teeth may be made to fit, though they be below the gum. Fifth, that roots of teeth may be properly scaled of tartar. Sixth, that a proper relation of approximating and antagonizing teeth may not be interfered with by fillings, crowns, bridges, or dentures. Seventh, that artificial substitutes may be formed so as to resist forces of mastication. Eight, that mistakes may not be made in extracting roots of teeth. Each root can be identified.

Deep anatomy is essential in the preparation of cavities for filling. An exact knowledge of the location of the pulp and the thickness of the enamel and dentine is essential, else many pulps might be unnecessarily destroyed. The minute anatomy of the pulp chamber, its horns and its root canals, is of first importance in extracting pulps. A good deal of the dentist's time is spent in treating root canals and reaming or enlarging them for posts for crowns. To do these operations with any confidence the operator must know, not only the ordinary types, but also have seen and studied many deviations from the normal. Every possible twist, curve or turn must be understood. The structures about the root must be studied that extracting may be deftly done. The thickness of the alveolus at various locations; the force required to fracture; the resistance to pressure; the attachment and the relation of the peridental membrane to the pulp tissue, as causes of extending inflammatory processes; tissues about apex that root fillings and treatments may not be improperly made; causes of pathological irregularities. It is hardly necessary to state the importance of knowing the histology of the enamel and dentine.

To properly cleave, cut and polish enamel it is necessary to know the direction of the rods, how they are attached together, and the relation each rod has to the whole. Enamel margins of cavities should be prepared, having in mind the direction of the rods, their length and the force to be applied. Dentine, like enamel, is more easily cut when its histological structure is recognized.

Though there are yet many inviting fields for consideration in discussing what a dentist should know to practise operative dentistry, your essayist must confine his remarks to departments which are often considered non-essentials. We often hear of dentists who have given some attention to inserting amalgam fillings, or gold fillings, or, perhaps, porcelain fillings, and immediately it is sounded abroad that he is a wonderful operator; perhaps!—and so is the girl who runs a sewing machine. The chances are he may be like the girl at the machine; he knows nothing at all of the why and the wherefore of his operating. It is not a very wonderful feat to pack gold into a cavity of a tooth, but it is no wonder how many of these fillings fail to preserve teeth as they might. There are so many opportunities for mistakes in judgment. The case, perhaps, should not have been filled with gold at all. Perhaps cement, amalgam, or a crown, should have been used. Does it follow that because a man can put in a good gold filling that he knows operative dentistry well? Not at all. While gold filling is, perhaps, the most important part of the technique of filling teeth, it is not the tenth of the subject of operative dentistry. While the subject has a broader basis than the mere filling of cavities, yet there are features of this subject worth considering for a few moments. To successfully fill a tooth and have the filling to properly restore the lost tissue and function, and prevent further recurrence of caries, consideration must be given to the amount and direction of the forces that may be applied to dislodge the filling. In some patients a stress of fifty pounds, or even a hundred pounds, may fall upon a filling. To withstand a stress of a hundred pounds on so small an area as a filling there must be some consideration given to its foundation. A filling with a large surface exposed to stress, with a seat of one-fifth the area, is almost certain to be loosened along its walls from condensation or flow, even if not completely dislodged. Where the stress may be applied to any part of the exposed surface of a filling the foundation should be flat so as to resist tipping. There is not much argument in favor of ever making a round seat for a filling. The filling is more difficult to insert and less resistant to dislodging forces when inserted. It is of equal importance in considering the stress applied to a filling to consider the strength of the filling material and the tooth tissue. If a tooth is made in the first instance to resist only the stress of mastication, after it has been weakened by decay and preparation for filling, it is very liable to fracture. At best it is only a splice and cannot have its original strength. Fractures often occur in molars and biscuspids where large fillings are inserted. In many of these cases enough care has not been exercised in the seating of the filling. A large amalgam filling which, perhaps, expands slightly, having a small wedge-shaped seat, is almost certain to cause the fracture of a frail pulpless molar or bicuspid. This is more likely to occur if the cusps are prominent and lock well with their antagonists. A careful consideration must be given to the resistance of the tissues around the tooth.

Metallurgy in Operative Dentistry.

It took years for dental colleges to understand that dentists should know something about the metals they are constantly using. I cannot go through all of the metals and point out how valuable a knowledge of each is to the dentist; but, for example, gold is in common use for filling teeth, and how many of us know even its prominent physical properties. We often hear that gold when malleted will roll up and contract instead of expanding as usually occurs, and that non-cohesive gold cannot be made cohesive. Then how many of us know just how much pressure is required to condense a given thickness of pellet, with a certain sized plugger point to a specific gravity of 15, which is, perhaps, the lowest that will at all prevent decay around it, and at the same time have strength and resistance to bear attrition. How many pounds do automatics strike and how many pounds are applied in hand pressure? With an ordinary sized plugger 6 to 12 pounds are required to condense gold. Do we often apply such pressure? Do we sufficiently study the physical characteristics of gold, or any of the metals or tooth structure? I fear not. Do we understand the properties of alloys, amalgams, or the constituents of cements and porcelains, sufficient to avoid error in their manipulation? Metallurgy as a subject gets but little attention. It is usually learned from accidents or misfortunes in practice—a slow, incomplete and expensive method of learning any subject and especially that of metallurgy.

Art in Operative Dentistry.

Are dentists as a class artistic? Do students and teachers of operative dentistry think the study of art essential? I doubt both propositions. The whole training, teaching and education of the dentist is, if not opposed to the artistic, not at all in that direction. The source of the recruits to the profession is not from among the artistic. Few, if any, young men, who enter dentistry can distinguish ordinary colors, having no notion of what are harmonious and what are not. The study of form has not been part of their education. The admiration of landscape, or the beauties of design, or pictorial conception have not been awakened in their minds. But you will say, "Are such conceptions of any value to a dentist." Besides broadening one's pleasures they have a utilitarian value to the dentist. They are all indications of culture, making their possessor better able to appreciate the beauties of the human form, to more accurately observe and detect offences against the artistic. Any lack of harmony about the mouth will be more readily noticed. Colors, light, shade and form enter into almost every operation of the operative dentist. Teeth must be selected not only to harmonize with their neighbors in color, form and arrangement, but also with the general appearances of the patient, having in view the lines and curves about the face and mouth. No one can be told just what to do to arrange a set of teeth artistically, than he can be told how to paint a great picture. It must be an expression of a conception of the mind of what is in harmony and artistic. The operative dentist must know when his filling or crown is in harmony with its surroundings, not in a mechanical exactness necessarily. Great patches of fillings in teeth are about as much in harmony with their surroundings as brass headed tacks in a marble tombstone. If a finger were broken from a marble statue would anyone dare to repair the defect by putting a gold finger in its stead. We often offend even worse by putting gold crowns on incisors.

ETIOLOGY, SYMPTOMOLOGY, DIAGNOSIS, AND TREATMENT OF EMPYEMA OF THE MAXILLARY ANTRUM.

By R. E. Loucks, D.D.S., L.D.S., M.D., Detroit, Mich.

Read before the Canadian Dental Association.

In studying disease it is always well to take up the cause first, as it not only assists in the diagnosis and prognosis, but in many cases is an indication for the plan of treatment. By knowing the cause of certain ailments, we are able to put into practice the highest art of our noble profession, viz., preventative medicine or prophylaxis.

The cause of empyema of the antrum may be divided into predisposing and exciting.

The principal predisposing factor in sinusitis is the temporary or permanent closure of the natural outlet. Swelling or thickening of the mucous membrane, the formation of granulations, polypi, or even the presence of inspissated mucus may be the cause of obstruction. Under exciting causes place the acute infectious diseases, particularly influenza. May also get infection from other sinuses, as posterior ethmoidal and sphenoidal cells, by resorption of the thin partition between these cavities.

The alveolar abscess infection is the one the dental profession is most interested in, for the reason that it comes directly under their observance. From a developmental and a histologic standpoint the sinuses are related to the nasal cavity, and the teeth to the mucous membrane of the mouth.

When the roots of the superior bicuspids and molar teeth project upward through the floor of the antrum, we know they are covered with the peridental membrane, a thin layer of cancellous bone tissue, and the mucous membrane of the sinus. Pus under pressure from an alveolar abscess from any of these teeth will seek the point of least resistance. Unfortunately, in many instances the covering over the apex of the tooth is less resistant than the buccal alveolar wall, or the root may project upward independently, and the abscess form its fistula into the sinus.

One case came under my care where diseased roots were left in the jaw and a plate fitted. The natural absorption of the alveolar ridge caused the plate to settle, and the pressure on the roots caused absorption of the thin layer of bone on their apex, with the result that three abscessing roots were emptying their septic contents within the antrum.

Another interesting case that became chronic before having treatment, was one in which a dentist forced the mesial buccal root of the first superior left molar into the antrum when trying to extract it. (I wish to say that it was not carelessness on his part, because the patient acknowledged having moved.)

Symptoms.—If the condition is caused by swelling of the mucosa or polypi, the patient usually complains of a blocking of that side of the nose, with a constant or intermittent discharge of fetid pus. Not infrequently attention is first attracted by a sense of fulness, heaviness, pain in the back of the orbit, with a severe, unilateral headache; a neuralgia, with soreness of the teeth on affected side, especially if the ostium is closed and the cavity is full of pus; pain, on pressure, over the infra-orbital nerve and the region of the antrum, and there may be a bulging of the nasal, orbital or facial walls. The neuralgic pain is described as a boring, nibbling or bursting one, which is intensified by stooping. The discharge is unilateral and liable to occur on rising, or on stooping, or lying with the head on the sound side. There may be a perversion of taste, and the patient is aware of the fetæ from the discharge. The pus may trickle down the throat on lying down at night and produce violent attacks of coughing, or in escaping to the pharynx, may set up a catarrh of the eustachian tube or an acute pharyngitis.

Diagnosis.—Bright yellow pus, with a sulphuretted hydrogen odor, escaping from one nasal cavity, would indicate the existence of suppurative disease of one of the accessory sinuses. Examine the nasal cavity after the application of a cocaine solution to contract the tissues.

1. The most constant sign of empyema is a drop of pus on the under surface of the middle turbinal. The discharge may be sufficient to fill the middle meatus and lie on the floor of the nares. Wipe it away, and if another drop appears immediately, or should the discharge escape more freely by the patient inverting the head, and tilting it so that the sound side is uppermost, it is a pretty sure indication of disease of the antrum.

2. Even without pus in the middle meatus, when you have other subjective and objective symptoms, you may suspect an empyema by the edematous granulations or polypi around the margin of the hiatus.

3. Percuss both sides to determine if any dulness or sensitiveness of the suspected side exists.

4. Examine the teeth and mouth carefully, and if any suspicious roots or pulpless teeth are on the affected side, it will assist you in the diagnosis.

5. Transillumination, by using a four candle-power electric light in the mouth and comparing the shadows on each side; or the patient may only perceive light on the sound side with the eyelids closed. This does not differentiate from a solid tumor, thickening of the mucous membrane or bony walls of the antrum.

6. Exploratory puncture with a large hypodermic needle or trocar passed through the wall of the inferior meatus, or drilled through the socket of the diseased root after its extraction. By whichever way the cavity is entered pus may well out.

7. Irrigation through the natural opening by means of a curved cannula (after having applied cocaine), and using a solution of peroxide of hydrogen. I have found this latter method a difficult manipulation in many cases, and depend mostly on the other means of diagnosis.

Treatment.—The essential feature in treatment consists in getting an opening for proper drainage, cleansing and disinfection. In all cases, if there is a diseased root, extract it, and open through the alveolus, and if it is a long-standing, chronic case, make a counter opening through the nasal wall in the inferior meatus. Should all the teeth be sound, or out, make an opening through the canine fossa large enough to explore the cavity with the finger, break down any bony partitions or edematous granulations—make a counter opening, if you deem it necessary, in the inferior meatus. Pack the cavity with iodoform gauze, and leave for twenty-four hours. The opening through the alveolus and canine fossa can be made with an engine trephine and burr, as exhibited here, or by using a chisel and mallet. Some advise closing the canine opening immediately, after a thorough curetting, where a counter opening has been made in the inferior meatus, and do all subsequent irrigation through the infra-nasal opening. From experience, I prefer to keep the canine opening patent by means of a hard rubber tube. I also use the same style of tube when I open through the alveolus. I use a large antitoxin syringe, with an eustachian catheter attached, and to make sure the whole cavity is flushed, I use a rubber disk to press against the gum and prevent back flow. It is well to use an application of cocaine in the nasal cavity before irrigation, to cause contraction and enlargement of the ostium to secure perfect drainage, especially the cases without the counter opening in the inferior meatus. Thoroughly cleanse the sinus by syringing once or twice a day with a warm solution. The condition and progress will indicate the medicinal requirements as the case progresses.

The acute cases require cleansing and soothing douches, while the old, chronic ones require cleansing, disinfecting and stimulating treatment. First of all irrigate with a warm peroxide of hydrogen solution to ferret out all sockets of curdy pus. Follow this with Seiler's or Dobell's solution or boracic acid, 20 grains to the ounce; potassium chlorate, 15 grains to the ounce; or solutions of one of the many antiseptic preparations, viz.: listerine, borolyptol, boral, glyco-thymoline, etc. For stimulating solutions, use nitrate of silver, 5 grains to the ounce; chloride of zinc, 1 grain to the ounce, or tincture of iodine, 15 minims to the ounce. The patient should be supplied with a syringe and cleansing wash, when not convenient to visit the office daily.

In a certain number of cases the suppuration continues for a long period, and requires much care and perseverance on the part of the patient and attendant.

The chief causes of failure, according to Dr. J. Watson Williams, are: " (1) The extensive formation of polypi and papilliform thickenings of the mucous membrane of the cavity, or (2) the co-existence of purulent inflammation in the ethmoidal or frontal cavities, from which pus escapes into the corresponding maxillary antrum."

THE PREPARATION OF CAVITIES FOR PORCELAIN INLAY NOT INVOLVING OCCLUDING SURFACES.

By Edward C. Abbott, Toronto.

Read before the Toronto Dental Society.

This includes simple cavities on labial, buccal, or lingual surfaces; also proximal cavities.

There are some principles which may be applied to preparation of all cavities for porcelain inlays: First, the cavity must be slightly smaller at the bottom than at the orifice, and free from undercuts. Second, the side walls should be almost parallel to each other, or as nearly so as possible. Third, cavity should be deep enough to afford good anchorage. Deep cavities afford the best anchorage. The more perfectly the filling is fitted and the less cement required, the stronger the union. The cavity should be formed so the inlay will present right-angled corners, *i.e.*, the cavo-surface should be a right-angle, this being, next to spherical, the strongest form which we can give to porcelain so as to avoid chipping.

In the class of cavities here described, it is very often possible to follow the direction of the enamel rods in preparing such cavities. This is the ideal—having all enamel rods supported by dentine. However, it is regarded as being better to disregard enamel cleavage and devote entire attention to a properly formed filling.

A proper depth is necessary, so as to secure strength sufficient to resist force used against filling in setting it; also to allow room at the bottom of the filling for dentine-colored foundation bodies; this latter prevents the cement from showing through, and aids in securing a good color effect. If the cavity be small or circular, it is abruptly deepened at a convenient place, pit-like, to act as an anchorage to the matrix during burnishing, and to furnish the under side of the inlay with a bead-like projection to guide it accurately to its seat.

The union of side and floor should be an easy curve, avoiding a right angle, thus facilitating the escape of cement. Where a proximal cavity extends near the incisal edge, it is generally thought best to leave the corner of enamel unsupported by dentine, depending upon the support offered by the cemented filling for reinforcement.

Fracture seldom occurs unless the support gives way. The gingival wall should not be extended root-wise to carry margin under gum, because the cement lasts better when not covered by the tissues. The gingival wall should be prepared as a horizontal plane—flat mesio-distally, and extending to the labial and lingual walls.

The union between the labio-gingival and linguo-gingival walls should be rounded.

Preserve as much of the lingual enamel as is strong, avoiding extensive cutting; in this way leaving a minimum amount of the inlay exposed to lower incisor wear.

The labial wall may be extended until sound enamel is reached.

The pulpal wall is slightly grooved in the dentine just inside the labial and lingual walls; this aids in the retention of the filling.

When labial wall is not involved extend lingual so as to admit inlay from this side, and cut a slight groove in the dentine just inside the lingual enamel wall for retention.

PREPARATION OF APPROXIMAL CAVITIES INVOLVING THE OCCLUSAL OR OTHER SURFACES FOR PORCELAIN INLAYS.

By W. C. Trotter, Toronto.

Read before the Toronto Dental Society.

The order of procedure in the preparation of these cavities for porcelain fillings is very similar to that employed for gold fillings, etc., viz., to break down overhanging enamel walls, remove all softened dentine, and extend the cavity for the purpose of prevention. This routine is followed by the process of extension for retention, which is the part of the procedure we are mostly interested in to-night. I will consider the preparation of these cavities under five headings: (1) Approximal cavities involving either labial or lingual surface; (2) approximal cavities involving both labial and lingual surfaces; (3) approximal cavities involving labial, lingual, and incisal surfaces; (4) approximal cavities in bicuspids and molars involving occlusal surface; (5) approximal cavities involving occlusal and other surfaces. In all cases the cavity should be slightly smaller at the bottom than at the orifice.

1. In the first class of cavities, the incisal and gingival walls should be at right angles to the other walls, and form somewhat of an obtuse angle with the labial or lingual walls, as the case may be. There should be a slight groove in the floor of the cavity. Sharp, abrupt corners should be avoided, and cavity

margins should be square and never bevelled. The pulpal wall should be parallel to the long axis of the tooth and slightly obtuse to the floor of the cavity.

2. The preparation of the second class of cavities is similar to that of the first, only the cavity is enlarged mostly from the lingual surface, from which surface the inlay should be inserted. The labial wall is made the floor of the cavity, and is slightly grooved. The incisal and gingival borders diverge slightly from one another, forming an obtuse angle with the labial wall. As in the first class of cavities, the pulpal wall is at right angles to the labial wall.

3. In preparing these cavities which approach or involve the incisal edge, a much greater degree of latitude in leaving frail, overhanging edges of enamel is allowable than in preparing similar cavities for gold. In order to prevent exposing the margins of the inlay to biting pressure at the incisal edge, it is advisable to leave what might be considered a frail enamel edge in the case of a gold filling, depending in the case of the inlay on the support afforded by the cement.

When possible, the lingual opening to these cavities ought to be the larger, and provision made for the insertion of the inlay from this aspect. There is not the same necessity to extend the gingival margins of cavities for porcelain beneath the gum line that there is for other fillings, because, if anything, the cement lasts better when exposed than when covered by the gum.

The gingival wall should be almost flat or horizontal, with a slight dip towards the pulpal wall, and should be rounded gradually into the labial and lingual walls, which depend for their general formation upon the extent of the decay, but should always be square-edged and strong. Especially should this be the case with the margins of the lingual wall, which require special strength to withstand the impact of mastication. The pulpal wall should be shaped according to its relationship with the labial and lingual walls, and as the nature of the case may demand. It should be so shaped as to give ample retention, and this is usually best accomplished by grooving it towards the labial or lingual walls. I will not deal with cavities involving both mesial and distal surfaces, as well as the incisal, as I presume this class of cavities will be dealt with under the head of occlusal cavities.

4. The fourth class of cavities, viz., approximal cavities in bicuspids and molars, involving the occlusal surface, are usually simple cavities to prepare, as the general rule is to have the gingival wall or floor of the cavity perfectly flat and at right angles to the axis of the tooth. The buccal and lingual walls should be cut at a slight obtuse angle to the floor of the cavity, the extent of the angle depending considerably on the direction

of the enamel rods at the mouth of the cavity. As it is not permissible to bevel the edges of these cavities, as for gold, care must be taken to extend and shape the margins that short and weak enamel rods will not form the edges. The pulpal wall should be perpendicular, and where necessary may have a step cut in it, always remembering, however, to have the step sufficiently deep to give ample body of porcelain for strength.

5. The fifth class of cavities which involve the buccal or lingual surfaces as well as occlusal, are prepared in a very similar manner to the previous class, The gingival wall is flat and dips slightly towards the axial wall. The buccal and lingual walls should be perpendicular with the gingival wall, and at an obtuse angle with the axial wall. The axial wall should be at right angles to the gingival wall and may be grooved slightly, either buccally or lingually. It is usually necessary and advisable to cut a decided step in the base of these cavities.

Instrumentation.—I use chisels for cutting away thin cavity edges, and, in fact, use them to a great extent in the preparation of the cavity margins. For preparing the interior of the cavity, I use fissure burs and round burs, and also use them in preparing the margins.

PREPARATION OF SIMPLE CAVITIES FOR PORCELAIN RESTORATION.

By W. G. L. Spaulding.

Read before the Toronto Dental Society.

In presenting this paper on cavity preparation for porcelain restorations upon the labial, buccal, lingual, palatal, and occlusal surfaces of the teeth, I do so feeling that I am acting the part of a Pharisee. There will be many points, no doubt, which will occur to you as pertinent, that have escaped me altogether.

An evidence of the increasing dignity of the dental profession and the increasing public respect for it, is manifest in the tendency toward better nomenclature among ourselves and before our patients. In the substitution of the word "restoration," for instance, for such words as "filling," and "inlay," there is evidence of that tendency.

Why is not an "amalgam filling" as much an inlay, in the ordinary mechanical meaning of the word, as one of porcelain or gold, cemented into a tooth? We might even admit that it is, so long as it is confined to the restoration of a tooth in a simple cavity. It is when the tooth requires to be restored in contour, however slight, that the word "restoration" becomes appropriate.

The cavities which I have been awarded for preparation embrace just those which in the days of first general interest in porcelain restoration seemed to include all that came within the limit of feasibility, though that limit was more or less arbitrarily set for the anterior teeth.

As porcelain bodies became improved, and became better understood, confidence in the material extended its application to morsal surface cavities, and the boldest of contour restorations. At the present time there is hardly a surface upon any of the teeth which one may not unexpectedly find one's self exploring the broad surface of a porcelain restoration in search of incipient decay.

Labial or buccal cavities may be restored in any of the teeth, so also palatal, of which more later.

Morsal surface cavities may be restored most artistically and serviceably. Incisal edges, when in need of restoration, become more than simple cavities, and so do not come within the subject of this paper, except when the tooth becomes worn by incisal occlusion so that it presents really a morsal surface.

In the preparation of the cavity there must be kept in mind the safe and easy removal of the matrix, the necessary bulk of porcelain, and the direction in which stress will be applied. Even parallel walls will hold a matrix which has been sprung into it, so snugly that it would be risky of the final result to withdraw it. Prepare the walls so that they are very slightly divergent in the direction in which the matrix lifts out.

The cavity must have depth enough to afford more than a veneer of porcelain, especially in morsal surface cavities. They ought to be at least one-half as deep as the width of the cavity orifice. However, no rule can be set for the depth.

It will not be necessary to repeat to this Society the necessity for getting margins in sound enamel, but with special application to labial cavities, where disorganized enamel is so frequently found, it is wholly important, because the platinum matrix must be burnished hard over this sharp margin. Crumbling of the enamel in doing this makes a very faulty result.

To reach the cervical margin of labial, buccal, or palatal cavities, where it extends high under the gingival margin of the gum, tie a piece of fine brass ligature wire around the tooth, with a disc of heavy tin foil folded over it where it crosses the cavity, and carry this up on the tooth with a clamp, such as that invented by Dr. Hatch. I prefer this one because it is less in the way of the work than any other I have seen. When it is placed in position, the foil may be burnished up over the gum, to be out of the way and to shed the moisture away from the cavity.

There are cases in which the occlusion has worn down the palatal surface of the superior incisors, and these may be restored to good service, and the wear checked, by removing the pulp and inserting a deep-seated porcelain, leaving the bite rather short.

Morsal Surface Restorations.—Open up fissures with a round bur (or inverted cone), which has been ground to a three-sided point. In these cavities a great deal of overhanging enamel usually requires removal. In some cases where special conditions indicate a departure, the slightly inleaning walls resulting may be "shored up" with cement.

In securing the outline of the cavity, the margin must not be allowed to cross the point of a cusp, nor dip into a fold of enamel. With morsal surface cavities plenty of depth can usually be obtained, and it is important that it should be so, for that is the chief factor in the life of a morsal surface restoration.

The finishing of cavity margins is practically the same in labial, lingual, buccal and palatal cavities. The angle of the margin of enamel and of the porcelain margin should be as nearly equal as circumstances will admit. A sharp, plain fissure bur in a hand-piece, firmly grasped in the hand, is an excellent means to employ. Have a lens convenient to aid in examining the cavity before calling the work completed.

Do not hesitate to enlarge a cavity as much as it need be for ease of manipulation. The easier and simpler the work can be made, the neater, stronger, and more accurate will be the result.

Selections

NERVO-CIDIN.

By Dr. B. S. Scott, Tacoma, Washington.

Read before the Washington State Dental Society, May, 1904.

The use of nervo-cidin in dentistry is in the experimental stage largely, but bears promise of usefulness when coupled with judgment in application. That many of the operations which are undertaken by the dental profession do not come up to the standard of him who performs them, because of the pain incident to such performance, is fairly evident. It naturally follows that to attain the highest ideal which is before the profession, in the matter of restoration of lost dental tissue, is much more difficult than it would be were the element of pain absent. What has been said has been based upon the personal experience of the speaker, who has no right to attribute to others difficulties and obstacles which interfere with his ability to carry out that which he attempts. In other words, he is not presuming to find a standard for anyone else, and what is to be said in this paper is only offered in the hope that it may be of assistance to those who may have had similar difficulties with which to contend, that they may profit thereby without the necessity of going over the ground for themselves. Each of us has his particular trend of thought, and each has some difficulty to overcome which to him seems to be paramount to any other; but each differs from the other both in the manner in which he views the obstacle, and also in his method of overcoming that hindrance. Consequently when the statement is made that the element of pain enters largely into the failure to attain ideals in the practice of dentistry, it is binding on no one beside the speaker, who, it is to be hoped, is the only one who is thus afflicted. Every one in this world of ours does what seems to him to be the best, most of the time, if not for the unselfish desire to be of the greatest service to others, at least for the purpose of increasing his income at the expense of others. This being the case, as most will admit, anything which will aid in producing more satisfactory results, with a minimum amount of inconvenience, ought to be hailed with delight by all. The result of a dental operation is many times a compromise between an ideal and the nearest approach to that ideal, which the endurance of the patient will permit. Therefore, anything which will eliminate the factor of endurance will render possible a greater approximation to the ideal. The element of pain has a very considerable effect in depriving a client of much that would be gladly given him in the absence of that disagreeable feature.

For these reasons some of the results of experience with the application of nervo-cidin for analgesic purposes is presented to you. These experiments, extending over a period of some seven months, too short a time, I grant, to make anything like a definite statement of results, but enough to show which way the wind is blowing, to suggest benefits and dangers likely to be expected.

Nervo-cidin is probably a coined word, the meaning of which, from its etiology, appears to be death of the nerve. Whether it was thought fully coined, intending to convey the meaning that only the sensory function of the nerve tissue was destroyed, leaving the other portions of that tissue unharmed, cannot be said, but experiments seem to verify such supposition. Unlike arsenic, which destroys any tissue to which it is applied, with almost an escharotic action, this drug seems simply to paralyze those fibres which convey sensation, and which sooner or later, with the removal of the drug, return to a normal condition. A further statement may be made that the sensation of heat and cold is not entirely lost, but there is with that sensation no painful accompaniment.

Information relative to what nervo-cidin is, whence it is obtained, what its dosage is, and the comparative duration of its anesthesia, may be found in very complete form in an article by Dr. Theodore Soderberg, of New South Wales, Australia, published in the *Cosmos* for August, 1903, covering much more ground than is possible to be given here. Briefly stated, nervo-cidin is a yellow powder, containing NCHCl, the exact chemical composition of which has not yet been determined. It is an alkaloid obtained from the bark of the gasu-basu plant, and is very soluble in water, and slightly so in ether and alcohol. It is the result of an attempt on the part of Dr. D. Dalma to secure for himself the Herbst prize, offered for some means for obtunding sensitive dentine without injury to the pulp, but which failed in one of the conditions, which required that the object to be obtained should be within a period of ten minutes.

Upon the announcement of his discovery by Dr. Dalma, Prof. Arkovy and the staff of the dental and pharmacological departments of the University of Budapest, undertook a series of fundamental experiments to ascertain the dosage of the drug, which resulted in showing that nervo-cidin is a poison which acts by producing paralysis of the nerve endings, as well as of the nerve centres, and that death from overdose occurs through paralysis of motor centres, and thus indirectly through paralysis of the heart; and further that the organism is unable through habit to withstand a lethal dose. The important part to dentists which was demonstrated was that in nervo-cidin we have a local anesthetic which in point of duration leaves all other local anesthetics far behind. Experiments hypodermically on rabbits and dogs determined that the dose per pound that would produce death was one seventy-fifth grain, thus making the dose for an ordinary human being, say of 150 pounds, two grains, but as it is found that it is very irritating to soft tissues and painful in its application, these facts are unimportant to us, who have so many local anesthetics which are fairly satisfactory for use when the soft tissues are involved. This leads to a classification of the purposes for which this drug is serviceable to the dentist.

Having eliminated the hypodermic use of it for extraction and minor surgical operations, on account of its irritating qualities, and the uncertainty of its action, to say nothing of idiosyncrasies, all of which are yet to be worked out by further experiments, we find ourselves limited to its use for extirpation of the pulp, and the control of sensitive dentine. In both these operations its action is marked, and satisfactory in many respects.

First: in extirpation of the pulp, arsenic has been the mainstay of the profession for many years, producing the desired result after more or less time devoted to its application, though there is often extreme sensibility left in the fragments at the apices of the canals, which annoy all practitioners except the mummifiers, the phenomenal success of whom is by no means universal, to say the least. With the perfection of the technique of what is known as pressure anesthesia, arsenic has to a large degree been relegated to the rear, but there are cases presenting from time to time which cannot be reached by pressure anesthesia, till the extreme sensitiveness of overlying carious tissue has been sufficiently overcome to admit the introduction of cocaine, or other local anesthetic, by pressure into the pulp cavity. It is true that in a majority of cases of this kind electrical osmosis can be used effectively, but the element of time necessary for cataphoresis has almost precluded its use except in special places, and its application upon young patients is almost impossible, owing to their natural timidity and their inability to intelligently control the strength of the current. For this purpose nervo-çidin has come to be almost a necessary adjunct to the armamentarium of the dentist who desires to inflict as little pain as possible upon his patients. The application of nervo-cidin is practically a painless expedient which renders the use of pressure anesthesia possible where otherwise it would be inadmissible.

Applied directly to an exposed pulp after *sterilizing* the carious cavity with any one of the various agents used for such purposes, it is comparatively painless, causing sometimes discomfort varying from a burning sensation to a mild toothache, lasting from a half to two hours, dependent upon the inflammatory condition of the pulp at the time of its application and the amount of bacterial infection which is present. Pulp tissue in which the circulation has not been impaired by chronic inflammation seems much more readily affected by the drug, and its action less painful than upon tissue which has been partially decomposed, in common parlance, become partly dead. The effect of nervo-cidin upon fully exposed pulps has been eminently satisfactory in many applications, and when potent, it results in the absence of those sensitive fragments which are so often found at the apices of the canals after the use of other agents, notably arsenic. In certain conditions of the pulpal tissue, a single application of the drug alone is not all that could be desired, and that has led to the combination of it with arsenic, adding a very small quantity of the latter to the usual amount of nervo-cidin. This combination, moistened with an essential oil as an excipient and germicide, rarely fails to accomplish complete insensibility of the entire contents of the pulp chamber and canals with a single application, after being sealed in the cavity for two or three days, care being taken to avoid pressure upon the pulp by guarding with a cap or otherwise, according to the choice and practice of the operator. The drug must be sealed in the cavity, preferably with some of the cements, to secure it from leakage upon the surrounding tissues, and if it is to be left for such a considerable time, careful and definite attention must be given to sterilizing the field, if soreness is to be avoided, a pain too often attributed to the action of a drug applied. This combination is to be used where the cavity of decay has not extended to a point where it is beneath the margin of the gum, because of the corrosive action of the arsenic, should any escape from imperfect closure of the cavity. In all other places nervo-cidin may be used by itself, even though it requires a second application to accomplish the result. Nervo-cidin produces anemia of the pulp, and therefore is not liable to discolor the dentine from infiltration of the blood, an annoying disaster often accompanying the application of arsenic.

Two important points are here repeated, first, accurate and definite sterilizing of the field of action, and second, application without pressure. The first to be accomplished by the application of the rubber dam, *always* if possible, not if convenient, the washing out of the carious cavity with any chosen antiseptic or germicide, and the mixture with the nervo-cidin, or its combination with arsenic, of some antiseptic; and second, the guarding of the point of exposure with a cap of sufficient size and strength to render pressure from the cement covering impossible. Where the pulp is not fully exposed, after taking the usual precautions for protection from infection, usually the single application of the drug is not sufficient for more than the accomplishment of a positive exposure, when the operation can be completed with pressure, or a second application directly to the pulp tissue, as seems best at the time. Combined with arsenic, one application is usually all that is required for complete removal after about three days' action. On account of its extreme solubility, its value as a means for relief from ordinary pulpitis, or odontalgia, where there is no serious septic infection, it is not indicated unless it can be sealed with some hermetic stopping, to prevent the influx of the fluids of the mouth. One more particular advantage and then its use for removal of the pulp will be left. In the treatment of young persons from seven to twelve years of age, where softened tissues from their contact with an inflamed pulp render their removal almost impossible, an application of what will be described later as nervo-cidin cement for sensitive dentine, will so anesthetize the pulp that free exposure can usually be obtained without any evidences of discomfort, when the operation can be continued in any way thought best. For this one purpose nervo-cidin is worth its cost if for no other purpose.

We may now consider the use of this drug for obtunding sensitive dentine. Agents of a similar nature which have an obtunding effect upon sensitive dentine have usually either had a deleterious action upon the pulp or have discolored the structure of the tooth, rendering it unsightly. Dessication by mechanical means or inundating of course have no such action, but their use is attended with more or less cumbersome appliances and they are time consumers of no little amount, as is also the case with the use of cataphoresis. Chemical dehydrators like chloride of zinc or caustic potash are attended during their action with considerable pain, and while they produce a fairly acceptable result, it is occasioned with sufficient pain to render them unpleasant to use. The application of nervo-cidin in the form of nervo-cidin cement is accompanied with little or no pain, but has the disadvantage of being slower of action, but at the same time more positive, for it absolutely controls the pain in almost every case. It is applied in the form of a cement without removing more than the very loosest of the debris from the carious cavity, and neither aided nor retarded, by the employment of essential oils, though the slight pain incident sometimes to its uses is lessened by such medicament. A notable feature is that the pain of application is not always most severe in the most sensitive territory, extremely sensitive surfaces often succumbing more quickly and more perfectly and with less accompanying pain, than those which are almost capable of being excavated without the drug, or in fact any drug. The cement is made in the following manner, no attempt having been made to alter in any way Dr. Soderberg's formula, as it has been found satisfactory in every particular. The liquid is made as follows:

Dissolve zinc sulphate in water, add gum arabic and stir; let stand for twenty-four hours and strain, add ten grains each of nervo-cidin and cocaine; as powder use uncalcined zinc oxide. by adding some of the stock fluid to the zinc a cement is made which is fairly insoluble and will not be washed out by the fluids of the mouth, until it has had sufficient time to perform the anesthetic action for which it was applied.

Dr. Soderberg directs that the application should be left from two to forty-eight hours, and then washed with an antacid, and that has been found sufficient, but in the practice of the writer there have been experiments made where it has been left in position for a week for purposes of observation, having been applied in teeth which were to be cut off for crowning, and in no case could unfavorable results be appreciated. No tests have been made as to the minimum time for the anesthetic effect, but Dr. Soderberg states that he has a record of a successful case with only one and one-quarter hours' application, and the writer has a record of one very beneficial application of less than three hours. Dr. Soderberg states further that he has added to the formula cocaine to reduce the pain of application to a minimum. That has not seemed an essential, for discomfort has been largely eliminated by sterilization, and the employment of essential oils before the application of the cement. There has been frequently uneasiness from its use, but usually not sufficient to cause complaint from the patient.

Nervo-cidin is not in any way an antiseptic, for this reason the use of germicides and antiseptics have been particularly mentioned, both previous to and along with its exhibition during this paper. A few cases from my records and then I am done.

No. 1. Robust male, age 38; two days' previous pain, at no time severe; pulp fully exposed, mesio-occlusal cavity; applied nervo-cidin four days; removal painless.

No. 2. Nervous female, about middle age, small and weakly; acute pulpitis for twenty-four hours previous; lived out of the city; right inferior third molar; others gone; buccal cavity; desired tooth extracted; unable to expose pulp on account of sensitiveness of softened dentine; applied nervo-cidin alone on cotton; pain continued for about three hours; ceased; removed pulp with no pain next day.

No. 3. Young lady, sanguine temperament, age about 20; approximal cavities in central and lateral incisors; very sensitive; applied nervo-cidin cement four days; no pain in excavating; filled one then, the other in about a week, when it had nearly recovered its former sensitiveness.

No. 4. Stout lady, rather advanced in years; suppurative pulpitis, inferior molar; applied nervo-cidin and cocaine, equal parts, four days; result ineffective; removed and applied nervo-cidin and arsenic; painless in twenty-four hours.

No. 5. Illy developed child, female, age 10 years; superior first molar on either side badly broken down; extremely sensitive on account of the loose material in the cavity impinging on the pulp; sterilized, applied nervo-cidin cement two days, removed all carious matter painlessly, made exposure, found pulp too sensitive to remove, applied nervo-cidin alone three days; removed pulp painlessly.

So one after another of these difficult and annoying cases might be cited, and in each would be found, if not complete control, at least sufficient improvement over former methods to warrant the proper and appropriate use of this drug. Nervo-cidin is not offered as a panacea by any means, nor is its application claimed to be original in the least. All credit is given Dr. Dalma and Dr. Soderberg for their efforts, which promise so much for the relief of pain in operations upon the teeth.

Briefly to summarize, the dangers to be expected from its use are, first, that the pulp may be detrimentally involved by its use for the relief of sensitive dentine, though in the practice of the writer so far no such result has made its appearance. For fear of such untoward result it has been avoided as an obtundant for sensitive dentine wherever possible.

In obtunding the pulp itself it is not indicated as a painless expedient when marked inflammatory conditions are present, nor in the treatment of suppurative pulpitis.

Its benefits are freedom from possible discoloration of the structure of the crown of the tooth, absolute insensibility to the apices of the root canals, with one application often, and almost surely with two; a simple means of removing the horror of dental operations from the minds of childhood, and a relief from the strain which the infliction of pain makes upon patient and operator alike.

One other use may be mentioned before the subject is left, and that is in the management of deciduous teeth of small children. Applied in the form of "cement" for a few days, nervo-cidin permits the excavation and filling to be done without any pain to the little people, and applied to exposed pulps in deciduous teeth, allows their treatment in any way desired by the operator without resistance from the child.

It is to be regretted that sufficient time and ability have not been possessed to make this a scientific paper, and also that the observations have not been tabulated more particularly as to time and quantity involved in the use of this drug, but it can only be hoped that should it be my fortune to take up your time again at some future session of this society, so signal a failure of good intentions may not be presented. What has been offered regarding the use of this drug seems to show that so far as these experiments can prove, it is destined to be a very important addition to the means at hand for the control of pain in operations upon the dental organs. It has been presented in a conversational way, and should the discussion bring out any questions that can be answered, the attempt will be made with pleasure. In conclusion, although it was not on the programme, liberty is taken to call attention to a new synthetic compound called acoin, made by the Heyden Chemical Works, of New York and Chicago, for hypodermic injection to produce local anesthesia in the soft tissues.

This was mentioned in the January *Cosmos* by R. W. Simon, D.D.S., of Baltimore, M.D., who claimed for it an anesthetic period of much longer duration than cocaine, eucaine or nervanin, a larger area of action, compared with the quantity of solution used, and entire freedom from toxic symptoms, and the power to reduce and annul sensation in periosteal inflammatory conditions. A package containing fifteen grains of acoin having been procured, a solution was made according to the directions of Dr. Simon, from the following formula:

Acoin	gr. viii.
Morphia Sulph	gr. ss.
Sodium Chloride	gr. xii.
Acid Carbolic	gr. iii.
Glycerinea (Price C. P.)	♏ iii.
Distilled Water ad	oz. iv.

Mix. Sig.: Local anesthetic.

Commenting upon its effects so far as I have tried it, it may be said to have marked antiseptic qualities, is more painlessly introduced than any other which I have ever tried, and will control to a greater degree than any other the pain incident to periosteal inflammation.

Acoin has been used with some hesitation, as there was no literature obtainable on the subject except that in the *Cosmos* of January, but so far during about three months, nothing has occurred to prevent reporting it to be a most harmless and complete local anesthetic for use in operations of the soft tissues. This is simply offered for what it is worth, as another and effective means of controlling our common enemy, pain, in a fairly comfortable manner.

DISCUSSION.

DR. F. G. TITUS.—I have used nervo-cidin more or less for the last six months and have found it very helpful and useful in my practice. I wish to say something about the possibility of injury to the pulp. I had occasion to apply some to a cuspid tooth for a seafaring man, who was called away suddenly, so that the tooth could not be completed nor the drug removed, and after three months he returned, and the effects seemed to have spent themselves and the pulp to have returned to its original state of sensitiveness; at least I was compelled to make another application before proceeding with the work. I find it of great benefit to me in my practice, and so far have not found it in any way injurious if used with judgment.

DR. B. E. LEMLEY.—I have tried the drug in one instance where I thought it produced an irritation of the mouth in the vicinity of the cavity in which it was applied. The cavity was a buccal one in a molar, and very sensitive. After leaving it over night the patient returned with quite a patch on the cheek adjoining the cavity which was filled with the cement. Fearing that perhaps it might have a deleterious effect on the soft tissues, I had tried to cover it with gutta-percha. The cavity itself was perfectly insensitive while excavating.

DR. J. W. CLOSE.—I must give my testimony to the beneficial effects of this drug, a sample of which was given me by Dr. Scott shortly after he received it. It proved so useful that I soon supplied myself with a stock, and do not now feel that I could keep house without it. I find it especially useful in badly decayed labial and buccal cavities among young people. In two instances it has failed to work, but that may have been through faulty application on my part. I have twice also exposed pulps unintentionally and had after trouble requiring extirpation, but this was purely the result of carelessness on my part in cutting out deep cavities, which were made insensible by the drug. I believe it will have a wide field of usefulness.

Dr. B. S. Williams.—I have tried the drug, since it was introduced in Tacoma, and found it to produce the result claimed for it. I have never used it much for anything except obtunding sensitive dentine, and but few times for that, fearing its effect upon the pulp. I used it once for grinding down live teeth for a bridge in the posterior part of the mouth, with great satisfaction, being able to grind as much as I desired upon live teeth for a very nervous patient. That was done some four months ago, and as yet there have been no indications of pulp lesion resulting from its use.

Dr. P. H. Carlyon.—I have used the drug to some extent, having been given some for trial by Dr. Scott, and find that it accomplishes all that is claimed for it. I have found it specially useful in grinding down live teeth, as was suggested by Dr. Williams.

Dr. Scott (in closing).—Regarding the trouble spoken of by Dr. Lemley, I must say I have had no such trouble in any case where I have used the drug. This is in no way to say that such a thing is impossible, only it has not been my experience with this drug so far. I must emphasize the fact that antiseptic treatment is a necessary accompaniment with its use, and necessary to the best results.—*Pacific Dental Gazette.*

ROUGH NOTES ON SOME UNSUSPECTED CAUSES OF THE FAILURE OF FILLINGS.

By W. Charles Davis, F.C.S.

The results here given were obtained from repeated testing in conical-ended glass tubes under Picro-carmine. In these experiments some six hundred quarter-inch test-tubes were used irrespective of cavities. Eighty-six different amalgams (alloys) and other fillings, in the microscopical part, low powers only were necessary, the three-quarter-inch objective giving the best definition in this class of work. The time occupied covered between two and three years. Notes on the behaviour of all good fillings in the mouth covered thirty years.

All-Gold Fillings (Foil).

Picro-carmine tight all-gold fillings gave the best results over all other stoppings.

Crown surface fillings gave better results than contours.

The failure of gold fillings seem to be due to the difficulty experienced in getting foils watertight.

Some gold fillings examined looked well after being twenty-seven years in the mouth; they were all crown surface.

Amalgams (Alloys).

Against Grinding in Mortars.—With many of the alloys tested, grinding in mortars considerably increased shrinkage.

Mixing rather dry in the hand or tube gave the least shrinkage.

Much kneading increased shrinkage.

Medium or coarse filings gave less shrinkage in the majority of instances than very fine filings.

Malletted alloys gave leaky results.

Amalgams made with the best materials and method gave results incomparably above all other fillings as tooth savers, the percentage of Picro-carmine tight alloys from the best materials was over 90 per cent. in cylindrical cavities, C E G tubes.

Alloys and amalgam proved unsuitable for front teeth.

Many of the alloys and some copper amalgams tested shrink, some badly.

Against Burnishing and Finishing the Day after Packing.—Burnishing the day after packing, with some alloys, again started molecular movement, greatly deferred final crystallization, and increased the shrinkage.

Final Crystallization.—The permanent retention of the burnish lustre indicated final crystallization.

Two Settings, Initial or False, and Final.—The experiments gave two settings with several alloys, in one instance an alloy setting soon after finishing did not retain the burnish lustre until after the fifteenth day, shrinkage commencing on the ninth.

Thin Floors.—Covering floors of sensitive cavities with non-irritant oxide cement formed an excellent backing for watertight alloys, the cement being kept dry until the alloy was packed. Picro-carmine tight fillings could not be obtained on cavities floored with gutta percha.

Best Method of Packing Alloys.—Lining cavities very thinly with soft alloy and filling in the bulk rather dry, in two portions under considerable wrist pressure, especially about the edges, with large, flat, smooth pluggers, always gave the best results.

Electrolytic Gas.—Some few alloys generated electrolytic gas, as indicated by the presence of minute bubbles in the color agent, during and after setting, and lasting some days. In one instance, an alloy setting soon after mixing was forced half an inch up the tube, the Picro-carmine in the upper part of the tube being at the same time crowded with gas bubbles, dislodging the cork.*

WHITE OXIDE CEMENTS.

To help overcome the leakage observed on some white oxide cements, the cavities were filled with micro gold laminæ, the mixed cement being rolled in the same material. This method seemed to block the pores and reduce shrinkage to a large extent, at the same time coating the cement with pure gold and without a break throughout the cavity.* a gold stud pressed into the centre of the cement gave to the fillings an all-gold appearance and protected the cement from the salivary washing away.*

Picro-carmine tight cement fillings were obtained by packing the cavities three parts full of cement, and when set (being kept dry in the meantime) capping with a watertight alloy.*

WHITE GUTTA PERCHA.

This material gave best results for filling front teeth in lateral positions by reason of its color, insolubility, easy removal, and renewal, the shrinkage in some samples being due to elasticity. Experiments were made to modify this defect, if possible.

Improved and fairly Picro-carmine tight gutta-percha fillings were obtained by packing the gutta-percha cold and forcing into the centre a porcelain cone-shaped core.*

Non-irritant white cement, kept dry until set, formed an excellent flooring and lining for gutta-perchas, and seemed to prevent the tenderness sometimes observed with some preparations of this material.

White cements and gutta-percha fillings were removed and renewed as soon as discoloration was detected. These fillings were examined twice yearly.

SHAPES OF CAVITIES.

Cylindrical, burred-out cavities gave the best results, square or irregular next: contour, egg-shaped, and undercut gave leakage.

VARNISHES.

Most varnishes afforded little protection for fillings, being mostly soluble in normal saliva.

Tubes showing the electrolytic gas phenomenon, and others as described above (marked with an asterisk), were sent to the editor of the *British Dental Journal.—Brit. Dent. Jour.*

AN EPISODE OF CONGRESS.

A number of things occurred in connection with the late Congress in St. Louis which are entitled to the distinction of having been begotten and nourished in a spirit as remote from that of fairness and right as are the limits of space from a given point.

It is our purpose to refer at this time to but one episode in the proceedings of the Congress, and that is the protesting on the part of certain of its members against granting to Dr. Charles E. Bentley, of Chicago, the privilege of participating in the functions of the Congress.

A more flagrant exhibition of perversion of that human characteristic credited with tending to make all men kin, a more pronounced discredence of the creed of a universal brotherhood of man, doubtless was never disclosed than did this action disclose.

A segregation of mental analysis of justice and propriety, and mental bias and prejudice, the later dominating the human, manly instincts of the man; complete ignoring of comparison from a standpoint of true manhood; refusal to cast in the balance of professional, personal or social worth to determine a true and just basis of social recognition; these men, who dealt this cruel blow showed themselves to be devoid of an attribute essential to humanity, surely to humanity as God would have us understand it. In thus wantonly humiliating Dr. Bentley, with their double volley of abuse and insult, the men who are upon record as instigating and pressing the action, have merited the reproach of the friends of justice, in the profession, of the world.

Recognizing the existence of sectional racial prejudice in our country and that this precipitated the onslaught upon Dr. Bentley, yet it appears remarkable that men could become so unbalanced, by even such prejudice, as to fail to comprehend the fact that this Congress was called as an International Congress, and that it was intended that it should be open to the profession of the world, regardless of nationality, race or creed.

The International Dental Congress at St. Louis was instituted upon a basis of the broadest cosmopolitanship. The Caucasian race was not expected, so far as membership and participation were concerned, to have greater rights than other races. Yet it remained to be disclosed that a faction of the profession in the United States, the land most cosmopolitan of all lands, would eagerly seek to debar a man from participation in the work of the Congress, and from fraternization, and social intercourse with them, because of the fact that the blood in his veins is not as purely Caucasian as theirs; and this notwithstanding the fact that that man has unmistakably demonstrated that he is, at least, their equal as a man of intelligence, as a dentist and as a gentleman.

For the purpose of showing the views and disposition of the foreign contingent of the Congress in relation to the action taken by a faction in the Congress, in Dr. Bentley's case, and to show that, in these gentlemen's estimation, a wrong was done, we are glad to publish a letter handed to Dr. Bentley by them, at adjournment of the Congress:

Dr. Charles E. Bentley, Sir and Dear Colleague,—We, the undersigned foreign members of the Fourth International Dental Congress, regretting that a local prejudice has, without our knowledge, prevented you from taking part in the banquet of yesterday, wish to express to you our cordial sympathy, and the assurance of our sincere sentiments of confraternity.

We hope to see you taking part in future international dental congresses, which will be open to all honorable men in the dental profession, whatever their race or their creed, and we pray you to accept, our dear confrere, the assurance of our best sentiments.

Signed:

Chas. Godon, Paris, France.
Monuel Palacios, Durango, Spain.
Cav. Uff. V. Guerine, Naples, Italy.
Rene Anema, Batavia, Java.
Geo. A. Roussel, Paris, France.
Ph. Sivioni, Rome, Italy.
J. S. Burke, Amsterdam, Holland.
Cassullo Francisco, Buenos Ayres, Montivedio.
Jose J. Rojo, Mexico City, Mexico.
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B. Platschick, Paris, France.
F. Martin, Lyons, France.
Emile Sauvez, Paris, France.
Joan de Otaola, Bilbas, Spain.

—*The Bur.*

DENTAL EDUCATION IN THE STATES AND CANADA.

There are two associations in the United States which are specially interested in the education of the dental students. The one is the National Association of Dental Faculties and the other is the National Association of Dental Examiners. The former body had, in 1901, agreed to the institution of a four-year course, and had put the same into actual operation, beginning with the school year, 1903-4. But at a meeting held at St. Louis during July last, they saw fit to seriously modify their decision, in fact to go back to what is practically a three-year course. This decision is looked upon by the National Association of Dental Examiners as a "most deplorable retrogression," and they regret that the Faculties Association was not strong enough to carry out the programme, which they admit was entered upon in good faith.

The Examiners' Association makes the following declaration:—

"After a careful, earnest canvass of the whole situation by correspondence and interviews with many of the leading dental educators of this country, as well as with many leading and influential practitioners of experience and observation, and also backed by some of the best legal advice procurable, as to what was the duty of this deliberative body, composed as it is of the various state boards, endowed under their various laws with the judicial and discriminative power and duty of establishing and maintaining reasonable dental educational standards and requirements, your committee is fully convinced that the time is ripe for this Association to declare in no uncertain tones what we hold to be most essential and necessary qualifications of a prospective dental college student in order to enable him to assimilate and appropriate the great fund of scientific knowledge offered him in any of our properly conducted dental schools.

"Your committee would, therefore, recommend that this Association establish at once, to go into operation not later than the opening of the school year of 1905-06, the educational requirement for admission to the dental college course of graduation from an accredited high school or its equivalent, all examination of credentials and equivalents to be placed in the hands of an acceptable appointee of the State Superintendent of Public Instruction, where not otherwise provided for by law.

"In view of the present disturbed and unsettled conditions existing in dental educational circles, and with a belief in the wisdom of avoiding all unnecessary disturbance of standards at this time, your committee would further recommend that no change be made at this time in the present requirements of this Association of not less than twenty-eight calendar months of college attendance for graduation."

There are here all the elements required for a pretty little quarrel between the colleges, which wish to run their students through as quickly as possible, and those more far-seeing, though less commercially-minded educationalists, who desire to produce a more highly-finished product.

Curiously enough, it would seem that Canada possesses the only dental colleges in America which now comply with the requirements of the Examiners' Association. Canada has now amalgamated and solidified its formerly distinct organizations into one National Dental Council, which grants licenses for all the vast Dominion. It is an achievement of which she may well be proud. We are also glad to see that she is not competing with the States on a three-year course basis. The editor of the DOMINION DENTAL JOURNAL writes as follows in the September issue:—

"In St. Louis, July 18th, 1904, twenty-nine representatives of dental schools of the United States and Canada met and called themselves the National Dental Faculties Association. They passed resolutions repealing all the by-laws of the Association which might interfere with what they wished to do. Then they said that the dental course hereafter should be only three years. In St. Louis, August 27th, 1904, the National Dental Examiners' Association passed resolutions to the effect that they would not examine a candidate for a license to practise unless he had a four years' college course, and, still more, after 1905, he must have passed the third year in high school before he entered upon his dental education. There is surely going to be a conflict, because there is not a single school left in the United States with a four-year course. Those who opposed the change, and have been teaching a four-year course for three years, have weakened, and gone back to three years. The only schools in America that are complying with the requirements demanded by the National Dental Examiners' Association, as to both time and preliminary requirements, are those in Canada."

The editor of *Items of Interest* wants to know why so much is made of the time expended, and contends that if a man is properly trained, he can be turned out to satisfy the examiners in three years just as well as in four. This argument is not a sound one, as the curriculum is of much more importance than the examination, and sound education than "hustle" and "cram." We are sure that it is only a question of time for the States to take pattern by Canada, not only in maintaining a four-year course, but in establishing a National Dental Council, where conflicting interests may be merged in national educational progress.—Editorial in *British Jour. of Dental Science*.

PRACTICAL USE OF NITROUS OXID.

By E. R. Jackson, D.D.S., Grand Rapids, Mich.

As nitrous oxid in the hands of a few proves to be a satisfactory agent for producing anesthesia, yet attempted and discarded as objectionable by many, it would seem a worthy subject for consideration. I have not made its administration a special study, but have administered nitrous oxid frequently in my practice during the past twenty years, and believe I have seen nearly all its commendable as well as objectionable manifestations. I have used it with patients of all ages from 3 to 85 years, and with people representing nearly every condition of mind and body, and I have never lost a patient, nor have I seen a single case showing dangerous symptoms which I now believe to have been directly caused by the anesthetic, or that might have been more favorable with a different anesthetic. Ought we to be surprised or should we denounce the anesthetic because a nervous woman is troubled with hysteria after operating upon her in the excitant stage of nitrous oxid anesthesia? Where should we place the fault if our patient screams and fights for liberty when we attempt to operate while the sensory nerves are still susceptible to pain? Should you condemn the anesthetic which, if carried to the proper stage, is sure to protect you and your patient from such unpleasantness? Would it not be better to believe ourselves capable of error, and by the exercise of a little common sense try to do what others have done with the same agent?

The principal objection to nitrous oxid, as generally expressed, is the brevity of the anesthesia, and this must be admitted. Yet if we improve the time as we may there will seldom be reason to complain of lack of time, as most operations will have been completed before the patient returns to sensibility.

Nitrous oxid, most frequently used in extracting, may also be employed to great advantage in any operation where pain and nervousness make a patient uncontrollable—excising teeth for crowns, pulp extirpation, replanting, cutting forms in very sensitive teeth for filling, lancing in abscessed conditions, or any operation the performance of which requires not more than a minute of time. If you would succeed in any operation under nitrous oxid anesthesia you must first ascertain just what work you have to do. Examine, with the view of forming a diagram of the case in your mind, as it appears in the patient's *mouth*, and *never* proceed with the anesthetic until this is acquired. Without a perfect understanding of the case confusion will prevent accuracy, and will so much retard the speed of the work that the duration of anesthesia will have elapsed before the work is completed. You should not expect to operate skilfully under personal excitement, and coolness is possible only where there is perfect understanding. Select suitable instruments for the performance of the work, decide where it is best to begin, and place the instruments in position on the bracket table so that you can reach them in their turn as you have decided to use them. This will help to avoid unnecessary change of instruments and consequent waste of time. Get an idea of the temperament and general condition of your patient without arousing his suspicion of your anxiety; and while it is well to show interest in his safety and some regard for his nervousness, I think it unwise to question him extensively or convey to him the idea that much depends upon the heart's action. What knowledge you gain is over-balanced by his increased nervousness. He fights you and the anesthetic at the first flutter of the heart, because the importance of this has been impressed upon him.

I think it is well to tell every patient something of the unpleasantness which he is sure to experience, assuring him that this need not alarm him. Advise him to take full, quick breaths, and to exhale forcibly; the inhalations and exhalations will be more uniform and the liability of cessation of respiration will be lessened.

After beginning the anesthetic say nothing and allow no one else to speak to the patient nor to you. He cannot understand clearly, and his effort to retain consciousness retards anesthesia and exhausts the patient. Never advise the patient to hold up the hand, to move a finger, nor anything that will require an effort on his part or give him an idea that you depend upon him to inform you as to the stage of anesthesia. You cannot safely rely upon such proofs, and you must decide by the sound of breathing and the absence of sensitiveness of the conjunctiva long after he would be unable to move a finger. This is the most trying moment for the operator. Upon your management depends your success and your patient's safety. You are about to begin the work the success of which is not certain, and the result of your effort can only be known when you have finished. To carry the anesthesia to the point where the best result is possible, at the risk of a human life given to you through confidence to protect, is by no means a nerve tonic, and to lose sight of the fact that there is always danger at this time would breed carelessness, which has no place in this work.

With nearly all patients it is safe to carry the anesthesia to a degree where the muscles relax, but this requires the most careful attention to the patient's condition, and is not advocated by any one whom I have known to discuss this subject. It is generally believed to be unsafe. If the patient has been allowed a breath of air occasionally during the administration, and symptoms of lividity are absent and the respiration uniform, I believe it far better to continue to this point than to attempt the work while the muscles are rigid. I learned this in the hospitals, where for surgical work in one case I continued the anesthesia over a period of thirty-five minutes, in which I was compelled to *keep* the muscles relaxed. I have administered nitrous oxid in a hospital in Grand Rapids for surgical work on several occasions with perfect success, and the patients were in most cases revived within a minute after the work was completed.

In all ordinary cases I use nothing but cold water in the face to revive a patient, yet it is always well to have within your reach proper resuscitants—a hypodermic syringe containing 1-50 of strychnia, a respiratory excitant; or a cardiac stimulant, as amyl nitrate; nerve-quieting remedies, bromide of potassium, etc., and to understand and employ without delay the proper methods for artificial respiration in case of cessation. Always use a mouth-prop unless the teeth are all removed from one of the maxillaries. It is especially convenient in events where the tongue after anesthetization is drawn back over the glottis and closing the air passages so that it becomes necessary to thrust the finger into the throat to recover it. A pair of tongue forceps should be kept conveniently by for such emergencies.

I never administer nitrous oxid with the clothing tight about the body or neck of the patient, nor permit the presence of a third party unless it be an assistant. Use nothing but liquefied gas. Test the apparatus to see that it is in good working order immediately before using. Keep cool and remember what you have to do.—*Register.*

THE MUSIC OF THE NEEDLES OF THE PINES.

By Dr. C. N. Johnson.

I have heard the great musicians from Remenyi to the Pole,
I have heard the peerless Patti at her best;
I have revelled in Beethoven, had a taste of Mendelssohn,
With some melodies from Verdi and the rest.

I have sat is wrapt absorption while De Reszke trod the boards,
I have heard magnetic Calve trill her lines;
But the harmony which moves me quite beyond a human gift
Is the music of the needles of the pines.

When the wind with wondrous magic sweeps across the harp of green,
And the air is stirred to melody divine;
When the needles wave and sparkle in the sun glints from the sky,
I bend in silent worship to the pine.

From the whitened slopes of Norway to the balmy, sunny south;
From the hill sides and the vales of every clime,
This grizzled, ancient monarch peals above the heads of men
An anthem weird and rhythmic and sublime.

One sturdy old enchanter standing guard beside the gate
For years has been the object of my love;
I have heard its variation from the roaring of a lion
To the soft and gentle cooing of a dove.

It has whispered to me legends of the days of long ago.
When the wild-deer and the Red-man sought its shade.
When the forest echoed only to the music of the spheres.
And the wreck had not begun of saw and blade.

As I listen to its story sung in notes from out the wild,
I am wafted far beyond the world's confines,
And my heart is filled with longing that when on the other shore
I may waken to the music of the pines.

—*The Bur.*

Proceedings of Dental Societies

NOMINATIONS TO THE BOARD OF DIRECTORS OF THE R. C. D. S.

District No. 1.—G. E. Hanna, Kemptville; J. Bower, Ottawa.

District No. 2.—G. S. Martin, Toronto Junction; George Herniston, Picton; Wellington Adams, Whitby.

District No. 3.—J. Frank Adams, Toronto; Chas. E. Pearson, Toronto; Robert Haslett, Toronto.

District No. 4.—R. Bruce Burt, Hamilton.

District No. 5.—A. M. Clark, Woodstock; C. W. Wells, Waterloo.

District No. 6.—Chas. Bean, Paisley; Milton Cavanagh, Owen Sound.

District No. 7.—H. R. Abbott, London.

BRANT COUNTY DENTAL SOCIETY.

A meeting of the Brant County Dental Society will be held in Dr. Norris' office on Tuesday evening, December 6th, for the purpose of electing officers for the ensuing year. The topic for the evening will be "Incidents of Office Practice."

Yours respectfully,

A. Almon Babcock, D.D.S., *Sec.*

Brantford, Nov. 8th, 1904.

Directory of Official and Voluntary Dental Associations and Societies of Canada

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Prince Edward Island.

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VOLUNTARY

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Secretary—G. K. Thompson, D.D.S., Halifax, N.S.

Dental Society of Western Canada.

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President—A W. Thornton, D.D.S., Chatham, Ont.

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Montreal Dental Club.

President—G. W. Oliver, 2681 St. Catherine Street, Montreal.

Secretary—W. Watson, D.D.S., 48 Park Ave., Montreal.

The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

Dominion Dental Journal

EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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ESTABLISHMENT OF DENTAL SERVICE IN CANADIAN MILITIA.

Applications may now be made to the District Officer Commanding for commissions as army dental surgeons in the militia of Canada. July 2nd, 1904, an Order-in-Council was published in the Militia General Orders establishing an Army Dental Service as a department of the Army Medical Service. Dentists will be appointed with the rank and pay of lieutenant, and after a service of five years will receive the rank of captain. There will be eighteen appointments made at present.

In the Militia Orders of October 5th appear further details of the establishment of the corps, setting forth the qualifications necessary. In this the qualification (*f*) states that the applicant must be in good standing in his profession, and present a certificate from the Membership and Ethics Committee of his district society. Below is the order, as sent out from headquarters, Ottawa:

DENTAL SERVICE.

Dental Surgeons' Qualifications.—When applying for a commission, a Dental Surgeon will attach to his application the following certificates, namely, as to

(*a*) Provincial License as Dental Surgeon.

(*b*) At least three years' public practice of his profession.

(*c*) Age 24 to 45.

(*d*) Physical fitness.

(*e*) Morality and good conduct.

(*f*) Good standing in his profession, from the committee of his District Dental Association.

Professional and Technical Equipment.—No dental kit is at present authorized; each Dental Surgeon, when employed, will provide himself, and bring into camp, the special instruments, drugs, and material necessary for his professional work, for which he will receive a lump sum of $10 for the duration of a camp of instruction, and a special amount, to be determined hereafter, when ordered with an army in the field.

No Costly Work to be Undertaken.—No gold filling is authorized, no dental work involving expensive material, much extra time and labor is to be undertaken, without the recommendation of the senior medical officer present, and the sanction of the Officer Commanding the Brigade.

Professional Attendance.—Officers, N.C.O's. and men actually embodied are alone entitled to dental services, after obtaining the written authority of the Officer Commanding the Field Hospital Company, or of a Regimental Medical Officer. Every facility will be given by the C.O. to the Dental Surgeons to carry out their work. The Dental Surgeon will prepare a daily sick list of incapacitated individuals and keep a statistical record of all cases attended by him, for the information of the Principal Medical Officer; his neglect or dereliction of duty, or improper conduct will be immediately brought to the notice of the Principal Medical Officer by the Officer Commanding the Field Hospital Company.

Uniform.—That of the Canadian Army Medical Corps with a white helmet, to be worn on the collar or lapel of all orders of dress, on the front of the helmet, forage or cap, and the left side of the field service cap or hats.

Personal Annual Report.—All Dental Surgeons within a district will personally report to the P.M.O. in field service uniform, at least once in the current year, as evidence to show that he is available for duty. Neglect of the order without cause might lead to the cancellation of his commission.

MISTAKE IMPOSSIBLE.

Under certain circumstances a patient's anterior teeth, or, perhaps, their roots need to be extracted and an artificial substitute made. It is very desirable to, as far as possible, restore the exact contour of the features about the mouth. But after the teeth have been extracted it is not always easy to remember the former fulness of the lips. To make an exact reproduction of the features possible, take a small facial impression in plaster. All that is necessary, is from the chin to the nose, and far enough towards the ear to include any area of change. When the restoration is being made the impression may be placed upon the face and the lips filled out to it with wax. There can be no mistake or misunderstanding between the patient or her friends, and the dentist as to the former position of the lips.

Editorial Notes

Dr. P. M. Corrigan, of Strathroy, was married Wednesday, October 26th.

When in doubt don't extract. When in doubt don't make a bridge. When in doubt don't put on a crown. But when in doubt devitalize the pulp.

Dr. A. J. McDonagh, Toronto, read a paper at the recent meeting of the Sixth, Seventh and Eighth District Dental Societies of the State of New York.

Dr. E. H. Wickware, of Smith's Falls, was married to Miss Patterson, of Toronto, on Wednesday, October 19th. Dr. O. K. Gibson, of Ottawa, assisted at the ceremony.

The dentists of Toronto held a meeting in the Dental College, Friday evening, October 28th, to consider the nomination of candidates to represent District No. 3 on the Board of Directors of the Royal College of Dental Surgeons of Ontario.

As a last step, before removing a matrix for an inlay from the cavity, pack it full of gum camphor, which will hold it without warping in removal and may be readily burned out without leaving a residue.

It is rarely necessary to use either a clamp or a ligature to retain the rubber dam in position; if a heavy grade of dam be used and the edges of the holes be tucked under the free margin of the gum.

Did you ever try putting on an ivory matrix before preparing the seat of a deep proximate cavity in a molar or biscupid? The bur may be then passed from buccal to lingual, close to the matrix, without the danger of its jumping out of the cavity, and into the gum, or into the pulp. Try it.

To Extract a Tooth Without Pain.—Take some newts, by some called lizards, and those nasty beetles which are found in ferns in the summer-time. Calcine them in an iron-pot, and make a powder thereof. Wet the forefinger of the right hand, and insert it in the powder, and apply it to the tooth frequently, refraining from spitting it off, when the tooth will fall away without pain. It is proven.—*Welsh Medicine.*

Obituary

THE LATE DR. MORLEY E. BRADDON.

Dr. Morley Everett Braddon was born in Dresden, May 20th, 1882, and from that time until 1898, when he finally went to London, he made his home in Tilbury, St. Thomas, and Thamesville.

He received his early education in Thamesville, Ridgetown, and in London Collegiate Institute, where he obtained his first-class certificate at the age of eighteen. While at the Collegiate he was an officer in the Cadets and did much to make the corps one of the best in Ontario.

His greatest talent was music, and when a small boy he was known as the Boy Soprano, his rich soprano voice being always a delight to his audience.

THE LATE MORLEY E. BRADDON, D.D.S., L.D.S.

Dentistry was his chosen profession, and four years ago he indentured with Dr. H. R. Abbott, of London.

Among the students he was a general favorite. In his junior year he was elected vice-president and in his senior year, president of the Musical Club. He revived the interest in the Glee Club by his enthusiasm for its success.

The Litandeb and Royal Dental Society always found his willingness to contribute a lift towards success.

Graduating with honors last spring, he had a brilliant career before him, and it was his intention to further complete his course by a year's study in Chicago.

He was a staunch supporter of the college sports and was always present to help cheer his comrades on to victory.

For years at home he was a member of Dundas Centre Methodist Bible Class, and last spring was appointed librarian of the Sunday School.

One week covered his illness. Taken ill on Wednesday, August 3rd, and compelled to give up the practice he was conducting for Dr. Dawson, he was taken to the hospital suffering from peritonitis, and on Monday, August 8th, passed peacefully away.

His funeral was on Thursday, the pall-bearers being some of his most intimate friends. A profusion of flowers testified to his popularity. The members of his profession in London sent a beautiful floral harp and were present in a body to pay their last tribute to the youngest dentist in the city.

Many friends mourn his departure, and extend their heartfelt sympathy to his parents and brothers.

SWISS PROFESSORS DISCOVER A NEW ANESTHETIC.—After three years of patient research, two professors of Geneva, Switzerland, have discovered a new anesthetic, which promises to revolutionize the practice of dentistry. In reporting this to the State Department, United States Consul Liefeld, at Freiburg, Germany, states that, finding the nervous system was influenced by colored light, the professors soon perceived, after experimenting with each hue, that blue had an extraordinarily soothing effect on the nerves. The consul says that a tooth may be painlessly extracted, with none of the usual after effects, by shutting up the patient in a dark room and exposing his eyes to a blue light of sixteen candle-power for three minutes, causing him to lose all sense of pain, although at the same time retaining his senses.

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Original Communications

CLEFT OF THE PALATE AND THE POSSIBILITY OF ARTICULATE SPEECH.

BY S. T. CHURCH, TORONTO,
Specialist in Speech Defects.

Read before the Canadian Dental Association at its Second Biennial Meeting held in Toronto. September 6th, 7th and 8th, 1904, in the Medical Hall of the University of Toronto.

Mr. President and Gentlemen,—Lest in the discussion of so intensely interesting a subject as that assigned me, I should weary you by a multiplicity of words without having impressed you with at least one or more definite ideas of practical value, I have taken the precaution to reduce my remarks to concrete form.

In dealing with this subject, it is not my intention to appropriate the precious moments placed at my disposal in a discussion of the question from a physiological or anatomical point of view, but from that pertaining to the practical or restorative.

It is a widely accepted theory that when the palate is cleft, distinct articulation in speech is unattainable. My own experience during a number of years in the correction of voice and speech defects and irregularities has been quite to the contrary.

Perhaps no form of physical disability contributes more largely to the humiliation and chagrin of the unfortunate victim than does cleft palate. And, may I ask, what is more distressing than to witness the unintelligible efforts of a person thus afflicted in his endeavor to make himself understood? Then, too, it is a source of very great discouragement, especially to the young and ambitious person, to be met on the very threshold of life, with the gloomy intelligence that there is no possible help at hand, no assured avenue of escape.

The subject of relief from the abnormal conditions present in cleft palate has engaged the attention of many learned and eminent men of this age, including specialists in surgery, elocution and vocal economy. After all, practically speaking, comparatively little has been evolved by way of setting forth a system of relief thoroughly effective and available to all. Surgery can proceed no further than to enhance, by way of skilful operation, the possibilities of relief under subsequent training. The mechanical appliance (I refer to the artificial palate) is essentially limited in its functions, and elocution, forming as it does a basis of articulate training, voice development and physical gesture, under normal muscular conditions signally fails in meeting the exigencies of a situation wherein the physically abnormal predominates.

Now, as to a system of training. It is evident that a system of training, either in conjunction with or without mechanical aid, having in view distinct articulation and clear enunciation under cleft palate or other defective muscular conditions, relative to the articulating machinery, must first of all recognize that muscular sympathy is a potent factor.

There is in the muscular domain of the human organism a sympathetic influence which cannot be mistaken or misunderstood, and which is keenly sensitive to disturbance in connection with any particular member of the family. In some instances this sympathy is quite marked, indeed; for example, the loss of an eye immediately arouses the sympathetic influence of the neighboring muscles and senses. The remaining optic promptly endeavors to perform the functions hitherto devolving upon both. The ear in closest proximity to the disabled member at once mounts guard, as it were, and like the trusty sentinel, gives, through the sense of hearing, warning of the approach of this or that object, as the case may be, which approach, under normal conditions, would have been observed by the eye.

I might enumerate many similar facts in connection with this phenomena.

Again, a recognition of two other important elements, must necessarily form an essential part of the system of training referred to, namely, mental and psychical energy. It is marvellous, indeed, just what may and can be accomplished when these great forces of our organism, mental, physical and physiological, unite in perfect unity of purpose and action toward a given end.

To complete the general outline there must be of necessity a definite, yet flexible, curriculum of technical and articulate work, adapted to the specific needs of each individual case.

Four distinguishing features characterize the manifestations arising from cleft of the palate:

1. An apparently uncontrollable tendency to direct the air

column, in its primitive or unvocalized state, through the nasal channel.

2. The absence of pure conditions of vocalization, resulting, in a large measure, from the preceding tendency.

3. Rigidity and inflexibility of certain of the remaining agents of articulation—the tongue, jaw and facial muscles, including the lips.

4. An extremely low standard of differentiation, or the power to distinguish between articulate sounds.

In the correction of these tendencies, the chief objects should be the arrest of unvocalized air escaping through the nose, prompt vocalization, the direction of the tonal column through the mouth, a flexible action of the remaining articulate muscles, the elevation of the standard of differentiation, and the introduction of such technical and articulate exercises, in graduated form, best suited to the demands of the individual case during the different stages of its progress.

To effect these desirable ends, skill, knowledge, experience, originality, patience and a broad conception of human nature is required on the part of the teacher. These qualifications must be closely allied with a reasonable degree of intelligence, and a liberal supply of determination, calm spiritedness, perseverance and willingness on the part of the student. Without this alliance all attempts towards restoration will be futile, even though surgical and mechanical aid may have been called into requisition.

Local conditions sometimes play an active part in obstructing the way to relief. Among these may be mentioned irregularity in the formation and setting of the teeth, the absence of one or more of the teeth, or, it may be, improperly adjusted artificial teeth. Then, too, the formation and habitual wrong tendencies and inaction of the tongue may seriously interfere. The same may be said of the lips, particularly the upper lip in the case of hare-lip. And, again, the jaw, on account of disproportion, or inflexibility, or both, may prove a stubborn barrier. These, and kindred tendencies, serve to make the restoration of speech under cleft palate conditions at times an arduous task for both teacher and student.

Notwithstanding these seemingly unsurmountable obstructions, time, perseverance and a full surrender to simple and effective methods of instruction, subject to natural law, will ultimately terminate in the most gratifying results.

In order to demonstrate in a practical and comprehensive manner what may be achieved by one afflicted with both cleft palate and hare-lip, under a well-directed course of articulate training, subsequent to surgical operation, but without the adoption of artificial means, I may be pardoned should I make bold enough to refer to a case of cleft palate now under my direction.

The case in question is that of a young man about eighteen years of age, a resident of this city. You will appreciate his unenviable condition when I say that at the time of his first consultation he made not less than fifteen ineffectual attempts to make clear to me his name. A few months prior to this he had undergone two very successful surgical operations, the one for cleft of the palate, the other for hare-lip. These operations did not afford practical relief, but did greatly enhance the possibility of restoration under training. Suffice it to say, that after a little over three months' instruction the young man is capable of joining in conversation in a fairly intelligible manner, seldom having to repeat a word or a sentence. He engages in shopping, telephoning and the like with equal success. It is safe to assume that, under a continuance of the present favorable conditions of progress, he will, at the end of an additional six months' training, be qualified, so far as articulate speech is concerned, and without the characteristic nasal twang, to deliver himself in public in an intelligible and acceptable manner.

This case is representative of others which have been benefited in like manner under similar conditions.

Referring once more to a means of relief, my personal opinion, briefly stated, is that the solution of the problem of articulate speech under cleft palate conditions lies in the united influence of surgery and articulate training, supplemented, it may be, in an exceptional case, by mechanical aid.

In conclusion, it is to be sincerely hoped that the age of practical discovery in connection with the improvement in the speech of those suffering from the embarrassing consequences of cleft of the palate will soon have reached its meridian, ushering in a new and gladsome era of relief.

CLEFT PALATE.

By Jas. M. Magee, D.D.S.

Read at the Annual Meeting of the New Brunswick Dental Society, July 12th, 1904.

Fifteen years ago it was generally considered correct practice to insert obturators in cleft palates. Following that a few surgeons were bold enough to state that operative procedure was the only correct thing. To-day there are few who will question their verdict. Of course, as in every other deformity, the earlier in life this defect is corrected the better it is for all concerned. The time when the operation for closure of the palate will be followed by almost perfect results at maturity, is when the infant's life may be counted in weeks. There is but one barring consideration, and that is the large mortality percentage. However, there are few parents who would not be satisfied to face the risk if they gave any thought to the misery the child must endure through life with this horrible deformity. Deafness, catarrh, and oftentimes consumption, are accompaniments of this affliction, to say nothing of the humiliation that a sensitive nature must feel when mixing with men and women who are in that respect perfect.

It was my privilege in the latter part of April to assist at two operations for the closure of cleft palates, both being performed by Dr. G. V. I. Brown, of Milwaukee, Wis., who came to St. John for that special purpose.

The first patient was a little boy, six years old. He was born with double cleft and double hare-lip, the fissures extending right through the nostrils. An operation, at which I was not present, was performed at the age of six weeks, by which the lip was made whole and the front part of the fissures closed also. The operation at which I assisted was that of closing both hard and soft palates. Four weeks prior to the date of operation, as a preliminary to the surgical part, and following Dr. Brown's instructions, I cemented caps on the deciduous second molars, each having a little loop soldered on the palatine side, into which I hooked the ends of a jack-screw for the purpose of drawing the maxillaries more closely together. The space at its widest part was about ¾-inch before the jack was applied. At the time of the operation the space was narrowed at least ¼-inch, and the sides of the vault were made more nearly perpendicular. The necessity for having the sides of the vault made more nearly perpendicular is that though the gum flaps may be stitched perfectly and union effected, they will tear apart again when the periosteum becomes reunited with the bones. It is necessary either to apply a jack across the mouth making tensicn drawing the sides of the cleft toward one another, or to cut through the outer plates of the maxillaries back through the tuberosities, and with powerful bone forceps partially fracture the bones on one or both sides, as may be found necessary. If this latter be decided upon it is requisite that a retaining device be inserted holding the parts in place until new bone has formed to fill in the fissures made on the outside.

The second case was that of a young woman eighteen years old. In her mouth the fissure extended only as far forward as the second bicuspid, and no appliance was used before the operation, as was the case with the little boy.

The operations consisted in dissecting the periosteum, along with the superimposed tissue, from the hard palate, freshening the edges, drawing the two sides of the flaps thus dissected away and stitching them together. Four wire sutures with flat silver buttons at each end to prevent the sides tearing apart, and an equal number of silk stitches were inserted. In each uvula were placed two stitches, the whole making as neat an operation as could well be conceived.

One of the greatest causes for uneasiness regarding the final result lies in the fact that the nasal secretions, necessarily rendered abnormally irritating as a result of the operation, find lodgment on the upper part of the palate, and as a consequence an opening may occur after perfect union has taken place. This opening, however, oftentimes closes of its own accord when granulation unites the bone with the previously dissected off periosteum. If union does not take place then, the edges may be stimulated to additional granulation by touching them with carbolic acid or nitrate of silver, and eventually, without further operative interference, a complete closure may result.

In each of these cases an opening occurred at the extreme front of the fissure. That in the case of the young woman has now entirely closed without any assistance on our part, and her palate presents a very satisfactory appearance, having even a perfectly united uvula.

Owing to the fact that the little boy was so hard to manage, and that he must not be allowed to cry or talk for five days following the operation, the same swabbing, syringing, and careful examination could not be carried out in his case, as was possible with the older patient. In order to remove the stitches and sutures it was necessary to administer chloroform. Unfortunately for a perfectly united uvula in his case the silk had sloughed out of the end so that it is now bifidate. However, as he has a perfect palate otherwise, except for the opening anteriorly which I have spoken of, and which I expect will be ultimately closed, the fact that the uvula is not perfectly united is of trifling moment.

Considering the difficulties to be overcome, the severity of the operation, and the fact that the cleft was such an extensive one, I feel we have reason to be well satisfied with the result. The child's health is vastly improved already, his color is better, his muscles feel firmer, and his weight is increasing rapidly, while his appetite is such that it is not easily satisfied. He can swallow readily now, whereas before the operation deglutition was imperfectly performed, and food was frequently forced out of the nose. He can also blow his nose now, a thing he was quite unable to do before.

In the young woman's case there had been no great trouble in swallowing, but she was constantly troubled with sore throat, her hearing was defective, and getting a little worse. She was somewhat catarrhal (though I have known people with perfect palates to be more seriously affected at the same age), and she did not talk well. Speech has only slightly improved in her case, though if it has improved any at this early date, it certainly will improve much more with cultivation and care. Her tonsils, previous to the operation, almost closed her throat; now, however, they have shrunken considerably, and operative interference, which was deemed necessary in April, will not have to be resorted to to make her throat healthy. Nature will soon reduce the glands to their normal condition.

The little boy has shown much greater improvement. He, however, is too young to take any care in trying to pronounce words correctly, but as he grows older he will certainly learn to articulate, because he is just now at the stage where the baby talk is giving way to the talk of the growing boy. Muscles hitherto inactive will be brought into use. There cannot be a question of a doubt but that operative procedure in these cases was the right thing.

TREATMENT OF PYORRHEA ALVEOLARIS

By Dr. A. J. McDonagh, Toronto.

Read before the Canadian Dental Association, held in the Medical Building of the Toronto University on September 6th, 7th, and 8th, 1904.

Mr. Chairman, Ladies and Gentlemen,—The subject which has been assigned to me is one of growing importance to us as dentists.

The disease pyorrhea alveolaris, it seems to me, is becoming more prevalent, and consequently there is a growing need for treatment.

There are several forms of the disease, upon the treatment of three of which I wish to speak. I do not intend to go into a description of any of the causes, or suggest anything new in the way of preventing the occurrence of pyorrhea alveolaris. The etiology of the disease is outside the province of this paper altogether, and, in fact, in a short paper such as this is to be, there is no place for discussing such things. What we want to deal with is, Can pyorrhea be cured, and if so, how? In answer to the first question, I would say, unhesitatingly, yes; and in answer to the second, I would say in the majority of cases by surgical treatment.

There are several forms of pyorrhea which we are called upon to treat, the most common of which is the one caused by particles of deposit accumulating just under the free margin of the gum. At first there is just a slight gingival inflammation caused by the irritation; after a time the pericementum becomes inflamed, and the whole tooth becomes loose and pus is discharged quite freely when pressure is applied to the tissues over the root of the tooth. It is then the dentist's attention is called to the condition of things.

The first step to be taken in this case is to remove the cause and the disease will disappear, and the cause in this case is the small amount of serumal deposit under the free margin of the gum. However, if this condition of things is not altered right at the start, the pericementum dies, and is stripped from the root of the tooth for a considerable distance towards the apex of the root, and where the pericementum has gone from, deposits will be found, and the irritation extended until, providing nothing is done to prevent it, the tooth will become loosened and have to be extracted, or will drop out without outside assistance. Of course, the sooner we get at it to treat this condition of things the better, but in any case we have to make the best of what we have in hand.

In the first place, we must have instruments strong enough to perform the work of removing the deposits, and slender enough to pass between the gum tissue and the root without doing much harm to the soft tissues. I like an instrument which draws the deposit off, not one which pushes it; although on some roots one which is used to push the deposit off will answer the purpose.

Having selected your instruments, proceed to remove all of the deposits that you possibly can; loosen them up, and take the greatest care to reach every part of the affected area. After you have spent a considerable time, say fifteen minutes for one tooth, at this part of the operation wash the pockets out with warm water, or, if you desire, with hydrogen peroxide, a medicine which does no harm, and which by its mechanical action may do some good. Now, if the patient could feel that tooth with his tongue, he would complain that it was rough, notwithstanding the fact that you have spent so much time and patience on it. Our next step, therefore, is to make that root perfectly smooth. We accomplish this by the use of hydrochloric acid of about 75 per cent. pure strength. There is one precaution we have to take in using it, and that is, we must be sure the acid reaches as far as the pocket extends. To accomplish this we wind an ordinary comparatively flexible steel nerve broach with cotton batting, saturate it with hydrochloric acid, and quickly insert it right to the bottom of the pocket. By "pocket" I mean the cavity made by the deposit and pus alongside the root of the tooth, not as I formerly believed it to be, a little blister on the root somewhere, with scarcely any opening into the mouth. We do find those, and will speak of them later. We said to insert your broach quickly to the end of the pocket, and then with a lateral movement swab the whole exposed surface. Do this again and again, until you are sure that the whole surface has been covered. After having performed this part of the operation, wash the pocket out with water again, and once more use your scrapers to find and remove any particle of deposit which may have missed you the first time, and which the hydrochloric acid will have loosened, not dissolved, because the hydrochloric acid will not dissolve the lime salts contained in the deposit in the short time you have immersed them in it: but it will dissolve the attachment of the deposits to the root, and accomplish your object just as well. Now wash out the pocket with hydrogen peroxide, and the first part of the operation is completed. That is, the root is clean and smooth, but the lining of the pocket may be pus-discharging tissue, and there may be an amount of dead tissue all around there. To overcome this condition of things, we use the same kind of instruments as for scraping the roots, but turn the cutting edge outwards; in other words, scrape the pockets, having in mind the fact that you want new tissue to grow in the place where the old tissue had been before the tooth had become diseased. Some authorities say that bone will not grow around a tooth if it is once destroyed by pyorrhea. Well, perhaps it will not, although personally I believe it will, if you remove all dead tissue. However, it does not make much matter, practically, to us whether it is bone tissue or cicatricial tissue or what not. Something does grow around the tooth which holds it firmly and allows the patient to have the use of it in comfort for years. We must not forget that when a tooth is implanted or transplanted the tissues grow around the root, and, in fact, apparently to the root, so firmly that it is difficult to remove the implanted tooth. And that is true, even though the implanted or transplanted tooth was much smaller than the socket when inserted. That being so, why will not the pockets in a pyorrhea case fill with tissue strong enough to hold the tooth? There can be no reason, gentlemen, because, as a matter of fact, the tissue does grow, as I have often proved to myself, and as I showed the members of the Ontario Dental Association last year, by exhibiting one of my patients who had been cured of the disease.

But I have been digressing, and I must return to the treatment. After the root has been treated and made smooth, the pocket and alveolus cureted, and the debris washed out, to make assurance doubly sure, swab out the pocket and apply to all the affected tissue trichloracetic acid, and wash out—I say "swab out," because this seems to express the idea, but we must be very careful in the use of this medicine, because it is a very strong escharotic, and it is not necessary to burn the whole gum tissue for the lack of a little care. Probably the best way of inserting this agent is in the manner I described for hydrochloric acid. Now dismiss your patient, with instructions to call on you again in three days, by which time you can see how the case is progressing, and also inquire if the patient is following your instructions, which instructions will depend on the severity of the case.

If you have had a great amount of cureting to do, the tissues over the root of the tooth will be sore, and all he will be willing to do, or, in fact, all that it is advisable for him to do, is to use an astringent wash. As soon, however, as the soreness leaves the tissue, a gentle massage is advisable, the pressure of the fingers always being used to induce the gum to grow on to the teeth. The patient should be instructed to do this often. Another part of our instructions to our patients is in regard to brushing the teeth, and if I had the time at my disposal, I would very much like to dwell at some length on this part of the subject, because there is a great deal of harm done with the tooth brush. Our instructions, however, to pyorrhea patients should be to always brush from the gums on to the teeth, that is, an upward motion for the lower teeth and a downward motion for the upper teeth, to be performed after eating, no matter how often in a day that might happen to be.

Another form of this disease, and one which is not so common, and which if it has been allowed to run is very troublesome, is that which is designated by the term phagedenic pericementitis. In this case there may not be any deposits to amount to anything on the root, and there may not be a noticeable amount of pus discharged, but the alveolus and pericementum disappear and the tooth becomes loose, or perhaps one side of the tooth is laid bare and the other is firmly attached and apparently healthy. We proceed in this case just the same as in the one already described, except that we must use more vigor in destroying the dying tissue, and we must never fail to devitalize the pulp if we desire permanent results. If a palatal root of a molar is denuded and the rest of the tooth sound, excise the palatal root and leave the rest of the tooth.

One other form of the disease I wish to speak of is that in which the pocket formed over the calculus has no outlet at the gingival margin and resembles very much the formation of an alveolus abscess from an infected devitalized pulp. It is quite possible to distinguish them, however.

After having diagnosed the trouble as pyorrhea alveolaris, locate as nearly as possible the position of the calculus, make a crucial incision over the spot large enough to work freely through, syringe out and proceed as described before with the hydrochloric acid. It is also wise to devitalize in this case, and this variety is usually connected with a rheumatic or gouty diathesis; therefore systematic treatment is required to prevent recurrence.

There are a couple of other phases of the disease I would like to speak of, particularly that resulting from a thickening of the cementum, but this paper is about long enough now.

I cannot close, however, without speaking of the condition of our instruments. They must be absolutely sterile. We must not take any chance of infecting our patients. Dr. G. Lenox Curtis, I believe, claims that in a great many pyorrhea pockets he has found evidence of secondary syphilis, and there are a great many other germs also, so we must use great care.

Is it ever wise to not treat pyorrhea alveolaris? Yes, when the alveolus and gum tissue are gone so far that the root would not have enough to support it, even though all the tissues were perfectly healthy. This may be qualified, however, if you want to use that root in a bridge where the root would not be subjected to any lateral strain. And that brings us to the question of using bridges on teeth that have been affected in this way. From experience I would most certainly say that it is wise, provided you are sure you have cured the disease first. Some of the most successful bridges I have put on have for abutments teeth which, when I first saw them, were so loose that you would think they would drop out.

In the matter of splints we must use the greatest care, and see that they are so made that they are absolutely firm and that they cannot move in any way, and that they are wide enough to stay firm as long as you desire them to stay in place; and if they are properly made, they are certainly of great use. But I would like to emphasize the fact that they must be properly made otherwise they would do more harm than good.

There is one other statement I would like to make, and that is in regard to anesthesia. In a great many of these cases of pyorrhea we find that it is very difficult to operate on account of the sensitiveness of the parts. Cocaine is very good, but its effect is not penetrating enough. Chloride of ethyl answers very well if the disease has not extended too far, and if we can work rapidly enough. The partial anesthesia with nitrous oxide gas is first class. I use a drug now called Nervocidin which acts very well. With it anesthesia lasts for hours and penetrates quite a distance. Care must be taken in its use as it is very poisonous, and it will devitalize the pulp of the tooth if used in a deep cavity and retained for some time. A solution of one in ten thousand will cause anesthesia, so therefore we do not need a very strong solution but anesthesia does not take place for about fifteen minutes after nervocidin has been applied. Always apply topically.

Now, Mr. President and Gentlemen, I have taken up too much of your time, and I must thank you for doing me the honor of asking me to read a paper at this meeting. I hope I have given some of you reason to think, and I thank you for the attention you have given me.

Selections

ESSENTIALS IN DENTAL EDUCATION.

What is to be understood by this use of words? Does this mental training in any sense differ from any other education in the final results? Is not all education, however effected, but a cultivation of the brain-cells, and in addition thereto, reflex power, represented in thought? These are questions of great importance, yet we are met with the assertion that education, to be of value, must be acquired through certain methods of training, an inheritance from mediæval periods, and that professional culture has no place in the mental standards of the twentieth century.

To the writer this view is radically wrong and unworthy the great accomplishments of this utilitarian age.

It is a problem remaining unsettled with many, whether it is possible to make a thinker—a philosopher—unless the education is based exclusively upon what are known as the humanities. This is the natural outcome of the standard of learning established centuries ago, and may find its best example in the study given to Confucius and his works by the recognized scholars of China. It is not the purpose, however, of this article to discuss this much-mooted question, and it is only alluded to here as a basis for related thought.

Dental education as understood fifty years ago was simply the acquirement of a trade. It consisted in its last analysis in the manufacture of artificial masticating substitutes and the stopping or filling cavities in teeth to prevent further destruction by caries. The man who labored in the laboratory found his work a succession of repetitions, doing to-morrow what he did the day previously, and the man over the chair had no other expectations or higher ambitions, each branch aiming at greater perfection as experience necessarily gave manipulative skill. There was but a limited sphere here for thought. The tendency was to a life of repetitions, and repetitions had the usual result of narrow thinking. There was no room for the broader life common to the older professions. The work was regarded as useful and necessary, but the men who followed it were held not to be worthy the consideration due professional men, and their claim to be such was derided, and socially they became, in a certain sense, outcasts and their claims to the doctor title was regarded as an assumption.

The fathers in dentistry were not satisfied with this anomalous position, and the effort was made to increase the curriculum to something more nearly that of medicine. The slow development of this through over sixty years has been fruitful through its slow progress in the evolution of acquirement that at this period marks it as equal to the mother profession in broader conceptions and more accurate modes of thinking and practice. The man in dentistry to-day aspires to a mental power that will enable him to hold communion with the more profound thinkers of his own and past ages. He is no longer satisfied with the nomenclature of his profession. He has cast aside the word mechanics, as related to artificial substitutes, and now labors under the prosthetic name. He is beginning to feel that the word dentist does not comport with the dignity of his calling, and recognizes that stomatology more nearly answers to his higher thought. The man who regulated teeth in the early periods is now an orthodontist, and the continuous-gum worker has been transformed into a practitioner in ceramics. This is encouraging. The superficial thinker may laugh and regard it as bordering on shallow conceit, but to the thoughtful mind it gives a positive evidence of a growing taste for the artistic in thought as well as in practice, for its indications, while limited, point unerringly to a higher standard through the evolution of ideas.

The curriculum of forty years ago, in the few dental colleges then existing, consisted of operative dentistry, didactic and practical; mechanical dentistry the same; a minimum of anatomy through lectures; lectures on chemistry with no practice in the laboratory; materia medica from the standpoint of the medical practitioner; the therapeutics limited to few drugs, and those used empirically; dental pathology was scarcely recognized as a distinct study and, above all, there was no standard of entrance. To-day the diploma of a four years' high school, or its equivalent, is demanded by the higher schools. This, as a preliminary, presupposes higher thinking and a dissatisfaction with the drudgery regarded as essential in the older methods of work. The man of to-day is finding his place, not so much in what is called the mere mechanics of his profession, but in the elaborating of its more artistic features that have in the past been mainly neglected.

He is brought in contact in his first year with the sculptor, modeller. He must rise to the conception of the beauty of form of the human mouth and all that it contains. He must think as he works over his chemical problems in the laboratory. He must grasp the limitations of his human intellect as he searches for the ultimate in his histological work. He will gather new inspiration as he studies the life history of the minute forms of activity in his bacteriological examinations. He will over the cadaver speculate on the dynamic power of the muscles, activity of the nerves, and the strength of the frame, and he must watch the knife of the surgeon as he skilfully dissects out the tumor or calls to his aid the mechanism prepared by the stomatologist to assist nature while she restores normal powers to the fractured jaw. He listens to lectures and works, it may be, in the physiological and pathological laboratory—in a word, he has become in the evolution of sixty years a thinker and a professional man.

This may not be true of all the dental colleges of the country, but it will be true in the not far distant future. The higher ideals are being grasped and slowly but surely are being made part of the curriculi of the schools, and before the curtain is rung down on the present century the thorough training outlined will be regarded as the essentials in dental education.

This brings the thoughtful individual to the consideration of the question, Have we, as dentists, lost or gained in this gradual evolution? It must be evident that there has been both a loss and a gain. We have lost to a large extent prosthetic ability. We have also lost in our manipulative skill in operative dentistry. This, we are aware, will be denied; but taking the country through, the percentage of skilled operators will not compare with those of thirty or forty years in the past. In a word, then, the mechanical side of dentistry is gradually giving way to a higher professional culture, and this, in the progressive development of time, must be relegated to a special class. It is difficult to view this possible change with any other feeling than that of profound regret. Prosthetic dentistry is, in the view of the writer, the second greatest boon given to humanity during the nineteenth century. It ranks, in his opinion, a close second to the discovery of anesthesia. It ought not to be cast aside as unworthy the highest efforts of the thinker; indeed, it should be to him, more than aught else, the very foundation and support of that higher spiritual life manifest in the human brain. It has extended the life of the race, but while this is important, it has not the same value as is its service in keeping the digestive apparatus in order and through this normal activity holding the nerve forces in harmonious and in working condition, thus preserving mentality to the last days of life. If there is anything higher than this in any profession the writer is not aware of its existence.

The art of filling teeth as understood fifty years ago and at present will undoubtedly give place to something better, at least so far as material is concerned. This is not to be mourned. The dentist has been too long the slave of a master of his own creating, and the release from the drudgery will be a happy fulfilment, when it comes, of the hopes of many years.

The bright side of this picture is the release it will give the practitioner and a larger devotion to those studies that make for a more liberal view of life and its duties, and those things that count for the spiritual elevation of man. To-day the dental practitioner is a drudge, not the drudge of fifty years ago, but still bowed down over his daily work for daily bread. He fails to grasp the possibilities lying dormant in his possession. He reads but little and thinks less. His days are given over to labor and his nights to disturbed repose. He has no hours and no desire to devote to the cultivation of those amenities that go so far to make beautiful our civilization. It is time he was aroused from this lethargic state, and the question of the hour is, How may this be accomplished? Education, as already stated, has done much, will do more; but we need an education that will lead the dentists of the period out of the morass of mere money-getting into the more perfect soulful life of the thinker.

Are we viewing dental education from the standpoint of the real educators in dentistry? Are we not laying down uncertain laws that will land our profession again into the depths from which we have laboriously emerged? There seems to be in a certain class of mind a feeling of rejoicing that the dental colleges of this country halted progress in this direction and turned the wheels of our civilization backward. When that body assuming the name of the National Association of Dental Faculties met at St. Louis and adopted three years as the course of college training, it cared nothing for higher education. The slogan was sounded broadcast, "We will be financially ruined if this four years' course is continued." Gold, gold, gold, has been the cry of the besotted world in all ages, drowning the "still small voice crying in the wilderness" of confused thought. Come out of the temples dedicated to the brazen god and in the clearer atmosphere of a broader culture breathe a new inspiration and a more perfect life.

"Recently one of our best writers, in discussing this subject of dental education in colleges, cried, in tones of agony, "Time! Time! Time! Always time, as though the length of a term was a true measure of the quality of the education imparted." Yes, time we must have. There can be no real value in hurried work. The brain-cells need time for an impression. The superficial mark fades rapidly! There is such a thing as indigestion of the brain-forces. They become over-saturated and refuse to further act. The power to think is measurably lost. That some may be able to accomplish in two years that which requires four in others is no argument to prove that the two years' man will be the standard-bearer in the future; indeed, in the experience of the writer this has been reversed in almost every instance. The man of two years has taken his intellectual pabulum too rapidly, with the result—mental indigestion.

The idea entertained that three years of nine months each is equal to four years of seven months is based on wrong conclusions and imperfect knowledge of the possibilities of dental education. Every one practically familiar with dental training is aware that the last two months of a nine months' course are the least profitable months, and relatively so of a shorter period. The human mind staggers under the continuous load and must have rest and time for recovery. For this the fourth year is imperatively necessary.

Some of the dental colleges tried bravely to resist the current that threatened to engulf them. That they failed is now an historical record, but their day of triumph will surely come. This will be when dentists cease to worship mammon. When they cling closely to their higher conceptions, treading under feet all baser motives. When they give their influence for a dental education that will draw out all that there is in a man. When they cultivate the best in literature and cast away that which drags down the profession. In a word, when they aim for the highest attainable.

The time may come when the man who studies will be graded according to his ambitions. The prosthetic worker may conclude his preparation in three years, the operative expert in four, and the stomatologist in five. Whether this will be the logical outcome of educational effort remains to be seen, but it is to be hoped that whatever course may be adopted it will be to the honor of dentistry and the broadening of the mental horizon of all who labor within its folds.—*Editor of International Dental Journal.*

IS THERE A NEW SCHOOL IN ORTHODONTIA?

At a recent meeting of a local dental society in New York an orthodontist read a paper and several times used the expression, " the new school of orthodontia." In the discussion which ensued, exception was taken to the phrase and the claim advanced that it is not becomingly modest for the rising specialist to consider themselves a cult with superior methods and aims; it was said that the success of to-day's practitioners is entirely due to the basis laid down by the pioneers in the field, and that orthodontia methods of the present supersede those of the past no more than do the modes of work in other fields. Granting all this, is it shown that there is not a new school of orthodontia? Must we admit, then, that there is a new school? Let us see:

The Old School Orthodontist.

Time was when the watchful mother observed with distress that her little one's second teeth were coming in " crooked." She hurried to a dentist, and nine times out of ten she was told "not to worry." That there was "plenty of time." That, probably, the teeth would " straighten themselves." That, anyway, nothing should be done " till the entire second set had erupted." (excepting, of course, the so-called wisdom teeth). So the mother with regret patiently endured the " crooked " teeth till the child, perhaps, was twelve or fourteen years of age. By this time intervention was obligatory. The dentist could no longer put off the day of beginning. Something must be done. But the teeth being "twisted" and "crowded," he figured out that space must be made in which to regulate. If the crowding were not too great, he attempted to gain space by spreading the arch across the bicuspid region. If, however, this did not seem to promise sufficient "room," perforce *he extracted a couple of bicuspids.* Men with less skill, or less conscience, occasionally removed the *cuspids,* usually the ones crowded out. This, of course, regulated the teeth by the instantaneous process. A few, who made a deeper (sic?) study of this complex question, sacrificed the *sixth year molars,* to allow the whole forward part of the arch to "fall back." That this might be absolutely impossible, because of the depth of the overbite and the articulation, apparently went unconsidered. That this extraction of the sixth-year molars never in a single instance, in the whole history of dentistry, produced any result at all adequate with the loss which it entailed, seems likewise not to have deterred those who followed the practice.

This is one glimpse of the "old school." Of course, it will be said that there were men who knew better; men who did better. Assuredly! else we would be, every jack of us, members of the old school yet. To the credit of the profession be it said, that a limited few did aim at higher things; did work to accomplish more than the automatic regulation of teeth by wholesale extraction of the more conspicuously "crooked" members of the dental arch. But who were these men? Twice ten figures will serve to check them off. Moreover, these were in a sense specialists in orthodontia. While not practicing orthodontia as a separate specialty, as many do to-day, yet they found their greatest pleasure in that branch of dentistry, and invited the work from them that hated it. These limited few were the pioneers in orthodontia as a science, and some of the best of them are with us yet.

The pen picture of the old school, presented above, adequately describes the vast majority, and with sorrow be it said, these men likewise are "with us yet." Thousands are still being advised to leave things to Nature, or to wait until the child is twelve or fourteen. Hundreds of teeth are being ruthlessly extracted for alleged regulation: regulation of those teeth visible when the lips are slightly parted. And here we come to the parting of the ways; to the chasm which divides the old from the new school.

THE NEW SCHOOL IN ORTHODONTIA.

What, then, is meant by the new school in orthodontia? The new differs from the old mainly in *motif,* in ideal. The primary object of the old school was to straighten a few anterior teeth that chanced to be crooked; twisted or crowded, protruded or retruded. The new school recognizes abnormality and endeavors to restore normality; it studies occlusion, and claims that normal occlusion demands the presence of every tooth that the Almighty planned for the human mouth, each in its proper place. A restoration of normal occlusion necessitates so-called regularity. Each tooth must be in true relation with those adjacent and with its antagonists in the other jaw. Obviously extraction can have no place in the doctrine of such a school. Extraction upsets the primary principle of the entire system; it alters the *motif;* it destroys all possibilities of reaching the ideal.

The old school disciples, even unto this day, often tell us "the occlusion of the bicuspids and molars was good; only the front teeth needed straightening; sooner than disturb this good occlusion I extracted the first bicuspids, and straightened the others."

The new school man tells us such a proposition is impossible. "If the anterior teeth could not be aligned without extraction, as you say, then I say, your posterior occlusion was not normal; and it would have been less sinful to restore it to normal, than to extract two teeth which you can never replace, and cause a malocclusion of both jaws which you can never repair."

The idea that the new school has to do with methods is likewise erroneous. It happens to be a fact that the majority (not all) of the new school men are using but one method, but even these do not require others to adopt their mode of work. All the new school asks is, that the orthodontist should aim to restore normal occlusion, rather than the mere straightening out of a few anterior teeth, because they happen to be more readily seen. Such work is akin to polishing the labial surface of a gold filling, and leaving the palatial portion rough. It may be a quicker way, or a cheaper way, and it may even satisfy the ignorant patient. All this the old school men claim, and the new school men do not deny it. But nevertheless it is the wrong way, and there is a right way.

One other thing the new school orthodontist does ask. He begs of the general practitioner, who does not himself even "regulate" teeth, to stop giving advice, and more particularly to cease advocating the extraction of crooked teeth, or of straight teeth in mouths where crookedness may exist.

In conclusion, the new school admits that many members of the old school have done splendid work. All honor to them as pioneers.—*Editor, in Items of Interest.*

SEPARATION.

By J. P. Root, D.D.S.
Professor of Operative Dentistry Kansas City Dental College.

To write for publication an article on "Separation" seems at first glance as sensible as to write giving reasons why we should use rubber dam in our daily practice, or to attempt to explain why the world is round; all three are supposed to be settled facts, or at least were in my opinion until a few days ago, when the system of separation I advocate in my practice and teachings was publicly condemned as being fit for blacksmiths, but not dentists. This compliment to blacksmiths and slam at dentistry did not alter my belief or change my practices or teachings, but simply placed me in a position where I must prove the system of separation for the filling of cavities in approximal surfaces was correct and taught and practised by the best dentists, or admit to my class, to my patients, that my practices and teachings were wrong. Possibly at the same time some readers of this article may be brought to realize that they are not giving the question of separation sufficient attention.

The means of obtaining space was not under discussion; simply the necessity of obtaining it. The results to yourself are the same, if not to the patient, whether you believe, as I do, that slow, painless separation with cotton, gutta-percha or linen tape is preferable to the patient, rather than the sad, heart-breaking space provided by the barbarous rapid separators on the market. A happy comparison of the two methods would be that of a surgeon desiring to administer an anesthetic, who in one case would carefully administer the proper amount of chloroform, or, if short in time, would bat his patient on the head with an axe. The result would be insensibility in each case, but not the same regard for his patient's feelings.

Why do we desire space? To have ample room for vision for instrumentation, for the restoration of the proper contour and point of contact, to have free access for proper finishing of all margins, to have space in using plastic fillings for the matrix, an absolutely indispensable article in this class of fillings in posterior teeth—all these requirements result in the tooth being left in its normal position, with normal shape, and an interproximal space such as nature intended—that is, self-cleansing, not a narrow, constricted one, always filled with destructive foreign matter.

For years I have supposed every progressive dentist practised separation, hence no necessity for papers or discussions on the subject; but my late experience demonstrates the fact all do not, so I will explain the methods I follow. Except in rare cases, where the reason is lack of time on part of patient—for lack of time on your part is never an excuse for inflicting unnecessary pain on patients—I practise separation by the slow method, and as a rule use cotton. It is my aim, where a number of approximal cavities exist in a mouth, to keep two or more in different stages of separation, thus not losing any time for patient or self; if there are proximal cavities in bicuspids or molars which probably will not be filled for a week or more, they are opened into, portion of decay removed and packed with warm gutta-percha; the stress of mastication does the rest, and in one week or two or three my space is obtained, and in the interval the patient has the satisfaction of masticating on a surface hard enough to bear a reasonable strain, and at same time not have cavity filled with decomposed tissue and organic matter; if more rapid separation is desired, the cavity is tightly packed with cotton slightly saturated with some essential oil, and the occluding surface coated with sandarac varnish to give a hard surface and help retention of cotton. Twenty-four to forty-eight hours is sufficient to obtain ample space. Some claim this system will result in a sore tooth, too sore for the malleting of a gold filling; in some cases it will, under these circumstances, or if for any other reason the operation is not to be performed at this time, remove cotton and fill with gutta-percha to retain space acquired, and in twenty-four hours all inflammation has subsided. If you have looked ahead in laying out your work, this soreness need not result in any loss of time.

In the anterior teeth, cotton should always be used, as no stress of mastication appears at this point to crowd gutta-percha. If cavity is a large approximal one, cotton is tightly packed and coated with sandarac; if small, where lingual or labial wall is not to be cut away to any extent, before wedging with cotton place a silk ligature between teeth at interproximal space, wedge with cotton, bring ends of thread between teeth at incisal portion and tie. This will insure retention of cotton in these cavities the same as posterior. If for any reason they are not to be filled at set time, remove cotton and insert gutta-percha to retain space.

From experience in my own mouth and the expressions of gratitude from my patients, when they learn why the cotton or gutta-percha is used in place of the metal separator, I am convinced the slow method is the only one to use, except when it is absolutely unavoidable; and if you look ahead at time of examination, it is indeed rare when you are justified in using any other. It is a rare thing for any of us to fill teeth for a patient without a preliminary examination, and if at this time we find there is only sufficient work for one appointment and this consists of approximal cavities, then is the time to begin your separation.

These reasons seemed logical, sound and wise, but to convince myself I was not in error, I deemed it wise to search in text-books for better authority than my own. On page 88 of C. N. Johnson's text-book on Operative Dentistry, I found my theories corroborated. Marshall, on page 174 of his excellent work, advised the same procedure. Kirk, in the American text-book on Operative Dentistry, advocated separation. Ottolengui, in his pronounced way, tells us in cold print we are right.

All good men change their minds; all good men make mistakes, and when they do, admit the same. My theory is and has been that any system every author of recognized text-books and every teacher in recognized schools advocate, preach and practise any particular course, there must be merit in it. Possibly these men may have changed their minds, so I took the liberty of addressing letters to them; also to teachers on operative dentistry in several of our schools, as well as other men of ability and reputation.

Dr. C. N. Johnson, of Chicago, whose opinions on cavity preparations are too well known to be discussed here, says: "A perfect operation cannot be made in such cavities without separation. Whenever we have decay on the proximal surface, the normal contact-point is soon sufficiently broken down to allow the teeth to drop together closer than Nature intended. In every such case separation in advance is imperative. Then, again, even in the event of the teeth not having dropped together, it is impossible to properly approach and perform our work without separation. To insert a proximal filling in the most serviceable manner means a sufficient contour to establish a normal contact-point and a properly formed interproximal space."

Dr. Edwin T. Darby, lecturer on operative dentistry at the University of Pennsylvania, ends his letter by stating: "It does not matter how space is obtained if it be done without great discomfort to the patient; but in my judgment the best results are obtained by having ample space. I cannot understand why there should be any difference of opinion on this point."

Dr. Edward C. Kirk, dean of the University of Pennsylvania, after being convinced my request was not a joke, says: "Of course I believe in the separation of teeth, for exactly the reasons you give. I grant that there are many instances where successful operations can be done upon approximal surfaces with little or no decided preparatory separation; but, on the other hand, in the great majority of cases I regard preparatory preparation as a *sine qua non* for a successful filling, and by successful I mean one that will not only restore the form and functional usefulness of the tooth, but prevent recurrence of decay."

Dr. Donald Gallie, teacher of operative dentistry in the University of Illinois, says: "I stoutly contend that all restorations of approximal surfaces require first of all ample separation."

Dr. G. V. Black, dean of the Northwestern University, says, among many other good reasons for separation: "If in filling teeth we do not separate sufficiently to finish our filling to the original form, and with the rounded contact, we will not, in my opinion, be doing our full duty to our patient; it is no matter whether the filling is of gold, amalgam or other hard material, the separation is required all the same, and to this extent it is required in all kinds of cases that come to us, so that literally I put my separator on for the purpose of building out to proper contact, and the proper finishing of that contact-point in all cases of proximal fillings, except those in which there is no contact."

Dr. J. D. Patterson, dean of the Kansas City Dental College: "I agree with you, except possibly in your manner of separating, as I usually prefer immediate means; but at least three-fourths of the cases should be separated."

Dr. E. K. Wedlestadt, of St. Paul, Minn., whose ability as a gold-worker cannot be questioned, and who headed the clinicians from the North-West at the Fourth International Dental Congress in their special demonstration of approximal fillings, says: "You ask, 'Am I not right in separating for the reasons given?' You certainly are right in following such a course. It is our duty as intelligent men in an enlightened calling to restore all teeth upon which we operate to their original size mesiodistally, and this cannot be done unless ample separation is obtained, prior to making the permanent operation."

Dr. C. B. Reed, of Topeka, one of the best known men in the Middle West, says: "When decay has destroyed the point of contact, thus obliterating the interproximal space, how can proper restoration be made without separation?'

Dr. W. A. Coston, lecturer and demonstrator on porcelain in the Kansas City Dental College, says: "The fellow who maintains that he can fill teeth as well without separation must be afflicted with a moral strabismus that would make the tears run down his back."

Dr. Hart Goslee, of Chicago, makes it an invariable practice to separate whenever the filling involves the approximal surface.

The preceding testimony advocating separation is so emphatic that I am more than ever convinced it should be followed, and it seems strange that any up-to-date dentist could publicly or privately condemn it.—*Western Dental Journal.*

SOME MEANS OF CONTROLLING THE BEHAVIOR OF OXYPHOSPHATES.

By Dr. W. V-B. Ames.

As a basis for the consideration of our question, we will take the behavior of pure phosphoric acid and zinc oxid as mixed for a cement. The ability to manipulate this combination depends upon the phosphoric acid being of a high specific gravity, being nearly free of water. Thus the first point upon which we will place emphasis is that dilution with water hastens, and freeing of water retards, the setting of this, as it does any such cement-making combination of the oxyphosphate class. On this plan an oxyphosphate can sometimes be improved for individual purposes by adding water for quicker setting or by evaporation of water for slower setting. Pure phosphoric acid is, however, never marketed as a cement liquid.

Since even a heavy phosphoric acid gives uncomfortably quick setting, certain phosphates of the alkaline or non-alkaline metals have been used for controlling this property. In short, the greater the proportion of phosphates added to phosphoric acid the more a resulting cement is retarded in its setting.

Unfortunately, the free addition of phosphates is apt to cause crystallization; therefore there is a limit to the treatment of the acid on this plan. To get around this limitation, I believe that I was the first to suggest the addition of dry phosphates to the liquid at the time of making the mix. These mixed phosphates I have furnished separately, under the term "flux." So much for retarding by means of adding extra phosphates.

Now since we cannot extract phosphates for quickening setting, another means of quickening setting is by the addition of phosphoric acid, more or less diluted with water. Syrupy phosphoric acid of the U. S. P. dilution can be further diluted to advantage by the addition of something like 10 per cent. of water and kept at hand for quickening setting of oxyphosphates of zinc when that is desirable in individual cases.

On this plan different cement liquids may be blended, or the liquid of one cement may be used with the powder of another when certain peculiarities of the powder of one cement fit it for certain purposes while the liquid happens to give working properties not suited to a case in hand. It is not reasonable to expect that a given combination can be applicable to advantage to the peculiarities arising in all of the conditions presented calling for the use of an oxyphosphate, especially when atmospheric conditions so markedly influence their behavior. As an illustration, the oxyphosphates of copper are decidedly influenced by summer and winter conditions. The original oxyphosphate of copper (Ames) was a combination with a powder, tending to give very slow setting; so it was provided with a liquid which with zinc oxid would be unworkable because of quick setting. In some later combinations ("Ames' New Process and No. 3 Oxyphosphates of Copper") the powder was modified to set with liquids of the nature used with zinc oxid. Having in the original the slow powder and quick liquid, there are here means ready at hand to control the behavior of New Process and No. 3 Oxyphosphates of Copper by simply using in the mix a portion of the liquid of the original for quicker setting during the cold winter season, for instance, and a portion of the powder of the original in the mix for slower setting of the summer day.

In connection with the powder portion, there are two conditions which markedly influence the setting, viz., fineness of division and pigmenting. A finely divided powder gives more rapid chemical action, simply because of exposing more surface to the reagent, and pigmenting hastens or retards setting according as the pigment tends to form basic phosphate more or less rapidly. It can be said that most oxids used for pigmenting have the tendency to retard setting, so that yellow, brown and grey powders can be depended on for slower setting than white.

To sum up, the setting of an oxyphosphate can be hastened by the addition of water or diluted phosphoric acid to the liquid, or by reducing the powder to a more finely divided state. The setting can be retarded by abstracting water from the liquid, or by adding phosphates ("flux") to the liquid, or by pigmenting of the powder with oxids tending to form basic phosphate slowly. —*Western Dental Journal.*

SOME PHASES OF PORCELAIN INLAYS

By W. T. Reeves, D.D.S., Chicago, Ill.

We are living in a wonderful age to-day, an age of improvement, advancement and achievement. The nineteenth century went out in a blaze of glory, its last decade witnessing the greatest strides ever made in the sciences and arts, but they were only prophetic of what was to be accomplished in the twentieth century.

In no field has there been greater advancement than in our own profession, dentistry. The last ten years of the nineteenth century placed us upon a firm scientific foundation. Dentistry combines the sciences and arts in true harmonious relationship, that is destined to go on to great achievement; and if what will be accomplished in the next ten years were predicted to-day it would sound like fairy tales.

It remained for the opening years of the twentieth century to inaugurate the investigation and research that will result in our greatest achievement, that of preventive dentistry. But the opening years of the twentieth century have also inaugurated as great advancement in corrective dentistry, and in the near future neither will be second to the other, but preventive and corrective dentistry will go hand in hand. In no branch of corrective dentistry is there so great a future as in operative dentistry.

We are right in the midst of a great change, so great that only the few who are on the "hill tops" can see the coming change, but it is coming on with irresistible force. While in conversation with a prominent dental educator the first of this month as to the position porcelain should occupy in the dental curriculum, I made a prediction, and while he conceded that porcelain had come to stay and that it had its place in dentistry and consequently should be taught in the colleges, he did not think it would reach the place I claimed for it. I am going to make that statement now, that it may be a matter of record: Ten years from now porcelain will occupy the prominent place in the teaching of operative dentistry, the same place that gold does to-day, and gold will be relegated to the past, and at most will receive but minor attention. To most of you, if not all of you, this may seem a very rash statement.

In the past three to five years I have made predictions that were considered equally rash at the time and were laughed and scoffed at, yet to-day they are conceded to be established facts by those who were then "doubting Thomases." One of the handicaps that have had to be met is the members of the profession who formulate and promulgate the opinions of the profession. They are governed by precedent. In the past they can find no precedent that points to more than a transitory place for porcelain, and in this finding they are aided by their own disinclination to take up a work that is so different from anything they have ever done.

There are many to-day who are claiming that the tidal wave of porcelain that is sweeping through the profession has reached its height, and that there will be a subsiding and settling of porcelain to a limited place in the filling of teeth, and that only in the hands of a few experts. I grant that, if precedent furnished us a reliable guide for the future, but the fact is there is no precedent that guides us to the future of porcelain; and these same persons lose sight of the fact that public demand makes its own precedent.

There have been a great many things introduced to the people by the profession that have had their day of favor which seemed at the time as though they were going to revolutionize the practice of dentistry, yet they have died out entirely or remained in use only in the hands of a few who became expert in their employment, which largely depended upon their advocacy by the operator.

To-day a person might go into a half dozen different offices for examination and receive advice on a half dozen lines as to how the work should be done, and the one who gets the work would be the one whose personality impressed the patient as being the best man or whose method appealed to the patient's common sense.

All methods were for the accomplishment of the same object, that of putting the mouth into a proper condition, and depended for their acceptance upon the advocacy of the operator. Further employment by the patient would depend entirely upon the success the operator had with them. Take it even in the matter of porcelain crown and bridge work, and it is the success of the dentist and his advice that has brought it to its prominent place in this line of work. You could put in a Richmond crown or a porcelain-faced soldered piece of bridge-work as readily to-day as you ever could; whichever is employed depends upon the advice of the operator.

Porcelain for filling teeth has brought about a condition that never existed before in the practice of dentistry. The people are forcing the dentists to take up porcelain for filling teeth, and not the dentists advising its use to the people. This is what is going to carry porcelain on to the time when it will be the chief material used in operative dentistry.

If it depended upon the dentists, porcelain would have but a limited place and would only be practised by those who took it up from love of the work and who were patient enough to work out its technique and persevering enough to tide over the failures and discouragements that beset the beginner. The trouble with the profession at large is that they think they can go to the chair and perform a practical operation at the first attempt at the work. Is there any wonder that they fail? They forget the years they spent that brought them up to the manipulative ability they have with gold and other materials. Failure would be charged up to the material, and not to lack of experience, for where is there a dentist who has practised ten or fifteen or more years who is lacking in experience?

Failure would mean but one thing if it were left to the choice of the dentist—the abandonment of the work. No dentist, unless incited by love of the work, would persevere against failure when he could have filled the cavity with gold in half the time and at least have had a filling that would have staid long enough to be finished, the patient dismissed and the bill rendered for services.

Now comes in this new condition, the people demanding porcelain fillings of their dentist. He soon finds that he must master this new material or lose his patients, for if he cannot do it for them, they will go to some one who can. Until two years ago all the interest aroused in the profession came through the profession itself, indicating that there was an increasing interest in porcelain. This fact is evidenced by the prominent place it has occupied upon the programme and in the clinic at all dental meetings in the past year; yet this alone would not have been sufficient to establish it beyond a limited use. It is the demand of the people that has done it and which will carry porcelain to the important place it is destined to occupy.

If I have succeeded in starting a train of thought that will lead to the conviction that the signs of the times point as I have indicated—and I might say that I know they do as well as I know that day will follow night—then this paper will have accomplished a mission. Perchance I may have carried conviction, what would be the logical sequence? Every one must prepare himself to use porcelain.

There are a few colleges which will send forth their classes this year fairly well instructed in the use of porcelain for filling teeth. The number and extent of teaching will increase each year; and I want to say that the student who avails himself of his privileges and perfects himself in the technique of porcelain operative dentistry will find in starting a practice that a few well-placed porcelain fillings will do him more good and bring quicker returns in patients than any other work he may do.

To the practitioner I want to say, if you do not meet the situation the younger man is going to cut you out. Take up the work now while you have time to do so without embarrassment to yourself or your practice. In doing so you will have at least four distinct methods to choose from, each of them having their warm advocates, and it is up to the dentist to decide which he thinks in his hands will accomplish the best results. The choice is between the high and low fusing bodies, the direct burnishing and the swaging methods.

I will give but a few brief points on this phase of the work, with the hope that it will be more fully brought out in the discussion. So much has been written upon the technique of porcelain filling that it is hard to bring forth anything new. The beginner is at a loss to decide what method to adopt, for when the advocate of one of the different methods has his attention he is convinced that that one is the best until the next one gets at him. If there was a competitive contest (if such a thing were possible) by those skilled in the different methods, and a body of dentists were judges, I think the decision would be in favor of the one using high-fusing body and direct burnishing. It is my opinion that the best results can be obtained in less time by employing these methods. High-fusing body is more translucent and gives a natural, life-like appearance to the inlay. It also maintains its form in fusing, and thereby enables one to build better contours and better contact points than with the low-fusing material.

Direct burnishing is working upon the original, while swaging is working upon a model once removed from the original. You can complete a matrix by direct burnishing and be ready to bake in about the same time that it will take one who swages to get his impression, and he has the model to make and all the matrix formation to do after that. Time is saved by direct burnishing, a better fit is obtained, and a filling may be made and cemented at one sitting.

Cavity formation enters into the question. The one who swages has to cut the tooth a great deal more than the one who burnishes direct, particularly the anterior teeth, so that they can take an impression and draw it from the cavity.

Right here I want to correct an erroneous impression that is spreading through the profession as to what I advocate in the way of cavity preparation. It is said that all I advise is the removal of decay, and that any old form, saucer-shape or otherwise, is then ready for matrix formation. Nothing could be further from the truth, for I have always been very exacting in what I consider necessary in the way of cavity formation for porcelain fillings. How that impression could have spread I do not know, for I have never written upon cavity formation, because I do not think a correct conception of cavity preparation can be conveyed by words of mouth or use of pen unless accompanied by models. The only thing I can think of that might have started this misconception is the statement I have made that " I believe strength of retention is due to adaptation, and the cement setting under pressure," but to get this adaptation you must have a decided form in cavity preparation.

I will briefly outline what I think necessary in cavity formation for porcelain fillings: All decay removed, margins extended until good, glistening enamel is reached, all margins bevelled to a knife edge, with the outer plane of the tooth and the gingival wall of all cavities subjected to occlusal or biting stress at least parallel with the occlusal force. In all cavities a triangular seating form for setting purposes and identification should be observed. The last is the most important of all, for it is only by a seating form for setting purposes that the filling will be in perfect adaptation to the cavity.

Another phase which has received but little consideration is the proper baking of porcelain. More harm and more failures have resulted from the improper baking of porcelain than from any one thing. This applies more to high-fusing porcelain than to low-fusing, for in fusing low-fusing porcelain you have to watch it so closely to avoid complete spheroiding that you run little risk of over-fusing, and when caught on the instant of fusing will give the minimum amount of spheroiding. There is more danger from over-baking with high-fusing porcelain than any other one thing.

The quality that high-fusing porcelain has of retaining its form is also a danger, for you can bake it until it is nothing more than glass, without losing its form. The result is a beautiful glaze, but a piece from which all the life and strength has been baked out. Is there any wonder that such filling fractures and chips? Porcelain fillings that are to be subjected to occlusal stress should only be fused to a glaze that will develop the color, and the thinner the piece of porcelain is, the more careful you should be not to overbake. I believe that porcelain properly baked and firmly set will, after the cement is hard, stand all the masticating stress that a normal tooth will stand.

One more phase: There is an almost unanimous impression that to be able to match all teeth a large number of colors is necessary. This is a mistake; twelve well-selected colors are better than twenty-four, and infinitely better than forty-eight. Having twelve colors, you will master them; having one hundred colors, they will master you. The whole trouble is that dentists have not been looking in the right way to see what colors were really in the tooth, and they also have not been handling the bodies in the right way to produce the colors they did see.

The colors in the tooth are all underlying colors, and you must look down into the tooth for the greys, the blues and the browns that are almost always present in the teeth, even the real light yellow and the almost white teeth. These colors should appear in the filling in order to have it match the tooth. The only way you can find these colors is by comparison. For instance, if you think there is grey in a tooth, hold the grey of the shade guide to the tooth, and if the eye is satisfied with the harmony between the color in the tooth and the shade guide, then it is grey that is in the tooth. It won't be the same degree of color, but by comparison you can judge very closely how strong the grey is. All other tooth colors analyze in the same way. To produce the effect you should bake the colors in layers; bake them in strong enough so that when covered with an enamelling layer of body the underlying colors will reflect through. This will produce a natural, life-like filling.

With twelve well-selected colors you can produce any effect you desire. Say four yellows, two greys, two browns, two blues and two greens. You can get any shade of any of these colors by the thickness of the layer you bake, and learning to bake in layers and putting your colors where you want them in the filling will give you an experience that will enable you to duplicate any effect you desire with almost absolute certainty.—*Forum.*

THE HEALTH OF SCHOOL CHILDREN.

Under the direction of the Commissioner of Health in New York City the Public School children have had their eyes examined by physicians, with the result that last year over half a million children were treated for a single contagious disease of the eye—trachoma—which when neglected results often in blindness. This means that over and over again the same child has caught the contagion, but the figures are still startling. For this and other diseases of the eye, as many as four hundred children were treated in a day.

In some cities the teeth of the children in the Public Schools are regularly inspected and operated on, simple instructions given for the care of the teeth, and the youngsters made to realize the importance of good teeth in the scheme of health.

These things are usually described as fads, but if at a reasonable outlay on the Public School children of to-day the next generation of men and women could have sounder eyes and better teeth than the present generation something of high value would have been done for the race. Defective eyesight produces headaches and much miserable illness. Defective teeth contribute to indigestion and ill-health in various forms.

Half the parents in Toronto think very little about the eyes or teeth of their children. In their own childhood they were not pestered, they say, with such nonsense—but they forget, probably, that they lived on simpler fare, and in more healthful surroundings than their children.

In the Public Schools nearly all the future citizens of the country are gathered together as they never will be in after life. They are there to learn—there often against their own will, and sometimes against that of their parents, to be taught what the State thinks they ought to know. If they do not come, the law intervenes to compel their attendance. They must learn to read, write, and cipher, and in learning to read and write moral instruction is given them. If the State finds, on more careful inquiry, that the highest good of all can be served by having medical examinations at stated intervals of all the pupils—if matters affecting their future health are otherwise being neglected

—if on some things the average parent is as ignorant as the children—why should not the State make use of its opportunity in having its future citizens gathered together in the schools to promote their good and that of the State?

All children need good eyesight, good teeth, good health. There are some things taught in school that many of the pupils will turn to very little account in after life. If a boy, destined to earn his own living by manual labor, learns at school to do vulgar fractions and contracts trachoma and loses his eyesight the State will have done him a capital wrong while meaning him a kindness.—*Toronto Daily Star.*

Proceedings of Dental Societies

ANNUAL MEETING OF NEW BRUNSWICK DENTAL SOCIETY.

The fifteenth annual meeting of the New Brunswick Dental Society was held at Fredericton, N.B., July 12th, 1904. To call it a "red letter day" would scarcely be satisfactory to an Orangeman, but while the attendance was not large, possibly owing to the fact that the second Tuesday in July fell on the twelfth, the proceedings were decidedly interesting and instructive.

The Council, which conducts the business and financial affairs of the Society, reports an eminently satisfactory state of finance for the year, a gratifying credit balance being shown in the accounts. Dr. J. W. Moore, St. Stephen, retiring from the Presidency of the Council, Dr. J. M. Magee, St. John, was elected to the office; Dr. F. A. Godsoe, St. John, was re-elected Secretary-Treasurer.

The general session of the Society was called to order at 9.15 p.m., Dr. H. W. Murray, of Shediac, President, in the chair. Enrolment of members was followed by the confirmation of minutes of last annual meeting. The President then read his address, as follows:

THE PRESIDENT'S ADDRESS.

Gentlemen of the New Brunswick Dental Society,—We have assembled once more, after a year's labor, for the purpose of mutual exchange of thought and experience, and for social intercourse. In 1890 the New Brunswick Dental Society came into existence, through the strenuous efforts of some of the older members of the Society, to whom much credit is due. On this occasion of my retirement from the honorable position in which you have placed me, I wish to express my sincere thanks and gratitude for the kind consideration received at your hands. I certainly appreciate the honor you have conferred upon me, and hope that any short-comings or oversight on my part, in regard to the interest of the Society, or to any member of the profession, will be received by you in a spirit of charity.

The harmonious desire and united efforts of the management, and particularly Dr. Barbour, to make this meeting a success, deserves special mention and commendation, and I think I am safe in saying that should anything occur to mar the pleasure or deduct from the profits of the meeting it will be beyond their control, and in spite of their most zealous efforts to prevent it.

While nothing very startling or unusual has taken place in the dental profession of the province during the past year, yet our Society is moving forward and doing a vast amount of good towards elevating the standard of our profession.

The general public is manifesting a deeper interest, and has more confidence in our profession than it did in former years. It is a fact beyond question, that no profession during recent years has advanced with such leaps and bounds as that of the dental.

This fact can be demonstrated by the vast numbers entering our ranks, which is proportionally larger than the increase of population, and still the demand for dentistry seems to keep apace with the supply of dentists. The more the public can be educated to the importance of preserving the natural teeth, the greater will be the demand for skilful dentists.

The general medical practitioners throughout the country are paying more attention to the teeth of their patients, and upon close observation and study of their cases, they find that many of the ills that the human body is heir to are due directly or indirectly to diseased teeth. Dental science is kindred to medical science, and medical science intermeddles with all knowledge.

Our Association contemplates the development of dental science, and we have before us an important field of harvest. Let our relative positions be what they may, there is work enough for us all. It is true that we do not all excel in the same kind of work, nor do we take the same interest in the same operations. If our peculiar genius and habits fit us for some particular kind of work better than another, let each one follow the line best suited to his taste, and he will find that in such a sphere he will surely win distinction. In meeting together at these associations, and presenting our different papers and clinics, and giving our various experiences in the true spirit of professional courtesy, one result must certainly follow, and that is the elevation of our noble profession, as a whole, and our individual improvement. Let us work to this end, and leave behind us such footprints that those who follow shall feel that we have not lived in vain.

Before closing these few rambling and disconnected remarks, I wish to urge upon the Society to adopt some means whereby the members of our Society, who do not take any interest in our meetings, many of whom are talented, and would be a great benefit to our Society, may be induced to take an active part.

I am sorry to say that I find a feeling among some of the members of our profession, that our Society is conducted and run entirely by a few members. They may have some reason for such feeling, or it may be a case of "sour grapes." I am not prepared to say which, but it might be a matter worthy of consideration. Another matter I wish to call the attention of the Society to is this: I think it would be well for the Dental Council to instruct the Board of Examiners to raise the standard of examinations, both preliminary and final, as I think it is below the standard of some of the other provinces.

This would also be a fitting occasion to urge upon every dental practitioner in New Brunswick, who does not receive the DOMINION DENTAL JOURNAL, to subscribe for it. The editor of this journal is doing a grand work, and has placed it within reach of all, and it is a duty we owe to ourselves to familiarize ourselves with our own dental literature.

Our Society's accomplishments have been those of sacrifice, devotion and good deeds. Whatever may have been our Society's origin, its future rests with us alone, and here in the presence of its members, I plead for a profession and society that will forever be a potent power for good; that will live and advance in the times in which we live, and not confuse itself with the shadowy walls of the past, nor be content with the days that were, but shall deem the opening years of the twentieth century the gateway to a loftier faith and wider usefulness.

It was decided that the paper should be laid on the table until the following day, when the suggestions contained therein should be discussed.

The Secretary read his report, which, on motion, was received and ordered to be filed. The Programme Committee reported the result of its work; the report of the Council was received, and ordered to be filed, and all outstanding bills were ordered to be paid. The Audit Committee, having examined the books and vouchers of the Society, reported everything correct.

A visiting practitioner, Dr. E. P. Peake, of Durban, Natal, South Africa, to whom the courtesies of the meeting were extended, was called on, and, in response, gave a very interesting and instructive address on the condition of dental affairs in Natal.

By this time, the hour being late, adjournment was made until the following morning at 10 o'clock, at which time it was expected that each one would be sufficiently recuperated to vigorously uphold his side of the arguments of the morrow.

On resuming business next morning, the first subject was a paper on "Cleft Palate," by Dr. Magee. (See page 598.)

This paper was followed by a talk by Dr. Moore, on cases in practice.

Dr. F. A. Barbour then gave a lecture on the arrangement of artificial teeth, illustrating his remarks with a practical case set up in an articulator. As a preliminary to the setting up of the teeth he, first, describes the taking of the bite. Presuming that correct casts have been secured, he moulds pink base-plate gutta-percha to the surfaces on which the plates are to rest. To each of the base plates he adds a ridge of yellow wax. These are then built and trimmed to correct fulness, contour and length. He secures a correct closure of the jaws by instructing the patient to swallow, and at the same time to touch the back teeth (meaning, of course, the wax in the molar region). A correct closure being obtained, while the wax is still in contact, the medium line is first marked and then two other lines are marked on the wax: one of which may be termed the *highest smile line*, and the other the *natural lip length line*. Next, the models are set in a Bonwill or a Gritman articulator, following the Bonwill measurement, from median line to condyle. The articulator being opened, the wax is now cut away from one-half the upper, and four teeth are set up on that side, beginning with the central and ending with first bicuspid. Now the wax on that half of the lower is removed, and four teeth corresponding with the upper are set on the lower, but with this difference: The *upper central* was the first tooth attached; the first tooth to be attached to the lower base plate is the first bicuspid; next comes the cuspid, then the lateral, and, finally, the central incisor to the median line. The remaining lower teeth of that side, beginning with the second bicuspid, are now set in plate, and that is followed by the corresponding upper teeth. Exactly the same order is followed in setting up the upper and lower teeth of the remaining side. He explained that the display of teeth is governed by the *smile line*—that is, the distance between the *natural lip line* and the *highest smile line* governs the length of tooth to be used. As the teeth furnished in sets by the dental supply houses are not anatomically correct, teeth from different sets are used in completing the case.

The following resolution, relative to the action of the various supply houses in refusing to give dentists the benefit of the reduction in tariff on artificial teeth was, after a vigorous discussion, unanimously adopted:

Whereas, the Dominion Government, in its wisdom, did upon a recent date, when amending the tariff upon articles coming into Canada, place artificial teeth on the free list; and

Whereas, the several dental supply houses and dealers in dental goods in Canada did petition and protest to the said Government against this action thereon; and

Whereas, the said Government, in consideration of the said protest and petition did rescind the order and placed a duty of 10 per cent. on artificial teeth, thereby reducing the duty from 20 to 10 per cent.; and

Whereas, the dental supply houses and dealers would not and will not give the dentists the benefit of the 10 per cent. reduction, but maintain the same price of artificial teeth as before the reduction of duty, therefore

Resolved,—That this Society considers the action of the dental supply houses and dealers as unjust, and not consistent with good business principles; further

Resolved,—That this Society places upon record its disapproval of the action of the dental supply houses and dealers in this connection; and, further

Resolved.—That a copy of these resolutions be transmitted to the several dental societies in Canada.

It is some years since a joint meeting of the societies of New Brunswick, Nova Scotia, and Prince Edward Island was held, and as such a meeting has always been prolific of benefit it was deemed advisable to try and arrange a joint meeting for 1905. With that end in view a committee was appointed to confer with like committees from the societies of the other two provinces, with power to make all the necessary arrangements for carrying it to a successful issue.

In the event of this committee being unable to accomplish the desired end, it was decided that their efforts should be turned toward making a success of the next annual meeting in St. John, on the second Tuesday in July, 1905, and they were vested with power to make all the arrangements necessary therefore.

The next matter of importance was the election of officers, and, as a result of the ballot, Dr. B. H. Torrens, of Fredericton, was elected President; Dr. C. H. Patton, of St. John, Vice-President and Dr. F. A. Godsoe, of St. John, Secretary.

It seemed just then that a halt should be called to enable the members to recuperate mind and body, accordingly adjournment was ordered, and a concerted movement made upon the dining-room of the Queen's Hotel, where, let it be said for the benefit of those who are looking for a first-class hostlery in this charming province, their every wish was gratified—

As hunger deep they satisfied,
And only did they cease to bite,
When they had lost their appetite.

Such *poetry* as the above, one uncharitable member says, would take away anyone's appetite; but as the proprietor of the Queen's does not quote or compose poetry, the prospective guest need not fear.

On returning to the hall of assembly, the President's address was taken from the table, and the suggestions therein were placed before the meeting for discussion:

First, "As to the notion which some members hold that the Society was run by a few." If such be the case, it is only so because the few take sufficient interest in the society to be present at every session of every meeting, and are desirous of seeing its affairs conducted properly. Those who have performed yeoman service in the past, because no one else was willing to undertake it, expressed themselves as being most anxious for new men to step in and maintain the Society's welfare. Let those who feel that such is the case, exhibit the earnestness that will command respect, and they will quickly be placed in positions of authority to *run* the Society as they think it should be run.

"Every member of the Society should be a subscriber to the Dominion Dental Journal, and thus assist in supporting the official organ of our profession in Canada." It was pointed out that The Journal would not only be glad to receive subscriptions, but would almost as gladly accept descriptive articles, relative to interesting cases coming under the notice of any practitioner.

"Some means, whereby the uninterested members of the Society may become enthused." A resolution was adopted, which, if lived up to, will solve the problem. In effect it was: That each member was to use his influence to induce, at least, one other dentist to attend the meeting.

Nothing definite was evolved from discussing the question of the "advisability of raising the standard of examinations." It was felt that the examiners would be instructed by the Council as to any changes in the system of examination. The Council fixes the limit to which the examiners are allowed to go for qualifying or registration examination, while the preliminary examination is fixed by law, being explicitly set out in the Dental Act.

A clinic, by Dr. Moore, of St. Stephen, on "Jenkins' Porcelain Inlay Work," was attended with considerable interest, more than one member who had not previously attempted a porcelain filling made his initial operation that day. Only a practical illustration of an uncommon operation is of real benefit to the majority of practitioners, hence it here suggested that wherever opportunities present themselves, everyone should avail himself and make an effort to master, at least, the preliminaries. There are three classes of men: Those who acknowledge their ignorance, yet are too bashful to learn; those who pretend to know everything, though really knowing very little, being ashamed to acknowledge the paucity of their attainments; and those who are both anxious to learn and not ashamed to acknowledge their ignorance by essaying a first attempt in the presence of onlookers. What a glorious Society it would be, and how greatly benefited everyone would be if each and everyone would modestly demonstrate something at our conventions.

The meeting was regretfully brought to a close without the full programme having been carried out. The committee in charge of arrangements for the success of the meeting had chartered a steamer for a sail on the beautiful St. John River, but she very inconsiderately broke her propeller on the way to Fredericton, and as a consequence other arrangements had to be hurriedly made for a social gathering. The fates seemed to be against such a thing, as a pouring rain set in, at times assuming the proportions of a deluge, so the members had to content themselves with dining together, telling one another stories, and making plans for the future.

R.C.D.S. BOARD OF DIRECTORS.

The election to the Board of Directors of the Royal College of Dental Surgeons resulted as follows:

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The above is a correct list of the dental organizations of Canada, with Presidents and Secretaries, so far as they are known to the Journal. It is the intention to keep a list of the officers of all Canadian societies in the Journal, so where there are omissions or errors please notify the Editor, who will make the correction, and so far as possible keep a corrected list, which will be of great value to the organizations.

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EDITOR:
A. E. WEBSTER, M.D., D.D.S., L.D.S. - - - - TORONTO, CAN.
3 COLLEGE STREET
To whom all Editorial Matter, Exchanges, Books for Reviews, etc., must be addressed.

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RE THE LOWERING OF THE STANDARD OF DENTAL EDUCATION BY THE FACULTIES ASSOCIATION.

The September issue of the DOMINION DENTAL JOURNAL contained two editorials, which have provoked unusual discussion in the dental world. The *British Journal of Dental Science*, commented favorably on the stand the dental profession of Canada, and especially the colleges, have taken in reference to the length of the college course. The *Stomatologist* of November says the editorials are misleading, and, in fact, the one referring to the differences between the Faculties' Association and the Examiners' Association is erroneous. We may have been in error when we said there was surely going to be a conflict. The *Stomatologist* may call it what it pleases, but the fact remains that until July 18th, 1904, both the Faculties' Association and the Examiners' Association agreed upon a four-year course, but on the above date the Faculties' Association decided to go back to the three-year course.

With this fact before the Examiners' Association, which met August 27th, 1904, a resolution was passed confirming its stand for twenty-eight months' teaching (meaning four years of seven months each), notwithstanding the action of the Faculties' Association. In fact, the only reason for passing the latter resolution was to call the Faculties' Association's attention to the fact that the four years' course would still be the standard for admission to examination by the state boards. While the *Stomatologist* may argue that there is no trouble existing between these two associations, it must admit that there is a grave difference. In fact, this is admitted, when it says that where differences occurred in the past between the two associations, that the conference committees came to an agreement; but, as someone has said, always with the Faculties' Association agreeing to what the examiners wanted. This might be expected from the firm stand the examiners took, even after the faculties came to other conclusions. No doubt an agreement will be reached, but it will be by the faculties coming up to the standard set by the examiners. The faculties should get busy and find out if their graduates are going to be allowed to sit for state board examinations without taking an extra year. The examiners have the legal authority to prescribe the course they will accept, and it should be the function of the colleges to give that course and to prepare candidates for their examinations. It is hardly treating a student fairly to accept him at three years, and give him a D.D.S., and lead him to believe that he may sit for a state examination, when the facts are so plain that this cannot be done unless the examiners back down—a thing they have refused to do, even knowing what the faculties have done.

There is also a criticism of the attitude we have taken in advising Canadian students to attend Canadian schools. We fail to see where the misleading statement is, or what is wrong about Canadian students taking a dental education in Canada, though they intend to practise in the United States. There are very liberal provisions in our laws for the acceptance of citizens of the United States to practise in Canada. In fact, many of the provinces have accepted these credentials without any examinations, which is not expected by the Canadian graduate in the United States, and surely they cannot object to reciprocity in this when it has always worked with such advantage to United States schools. It may be information to the editor of the *Stomatologist*, when we say that there are to-day, and have always been, more Canadian students in the study of dentistry in the United States than in Canada. Can there be anything wrong about making an effort to educate our own dentists, especially when we maintain a higher standard than our neighbors, and since we have a course which satisfies the demands of both the National Dental Examiners' Association of the United States and the Canadian Dental Council of Canada? There can hardly be any objection raised to our pointing out to our students how they may enter upon the study of dentistry in Canada. We are not appealing to students of the United States, as their schools have been appealing to our students. Every dental office in Canada is flooded with literature of the dental schools of the United States. Dentists are offered inducements to send their students abroad. It is pointed out that almost any matriculation qualification will do, and truly it will. Agents are appointed, or acting right in our very colleges, to induce our young men to attend foreign schools. Our profession, our boards, and our schools have suffered this to go on for years without realizing what it means to our country, or making a counter-effort; and though there have been hundreds more Canadian dental students educated in the United States than in Canada, yet there is a cry out on the first effort made to do our own educating. The truth is, we do not see anything wrong or misleading in our statement of facts, as they stood at the time of writing, and as they still stand, as is shown by the following resolution made by the National Examiners' Association. The very wording of it shows what they mean, and what they intend the Faculties' Association to understand by it:

"After a careful, earnest canvass of the whole situation by correspondence and interviews with many of the leading dental educators of this country, as well as with many leading and influential practitioners of experience and observation, and also backed by some of the best legal advice procurable, as to what was the duty of this deliberative body, composed as it is of the various state boards, endowed under their various laws with the judicial and discriminative power and duty of establishing and maintaining reasonable dental educational standards and requirements, your committee is fully convinced that the time is ripe for this Association to declare in no uncertain tones what we hold to be most essential and necessary qualifications of a prospective dental college student in order to enable him to assimilate and appropriate the great fund of scientific knowledge offered him in any of our properly conducted dental schools.

"Your committee would, therefore, recommend that this Association establish at once, to go into operation not later than the opening of the school year of 1905-06, the educational requirement for admission to the dental college course of graduation from an accredited high school or its equivalent, all examination of credentials and equivalents to be placed in the hands of an acceptable appointee of the State Superintendent of Public Instruction, where not otherwise provided for by law.

"In view of the present disturbed and unsettled conditions existing in dental educational circles, and with a belief in the wisdom of avoiding all unnecessary disturbance of standards at this time, your committee would further recommend that no change be made at this time in the present requirements of this Association of not less than twenty-eight calendar months of college attendance for graduation."

CONCURRENT COURSE IN DENTISTRY AND MEDICINE ARRANGED BETWEEN THE R.C.D.S. AND THE UNIVERSITY OF TORONTO.

At a meeting of the Board of Directors of the Royal College of Dental Surgeons about two years ago a committee was appointed to inquire into the advisability and possibility of arranging a concurrent course in dentistry and medicine. The members of the committee deserve a good deal of credit for so successfully accomplishing what every dentist has thought to be of great advantage to the profession. The committee reported its findings to the Board in April, 1904, and was reported in the proceedings of that body. It was only at the last meeting of the Senate of the University of Toronto that a statute was passed bringing the course into effect. Any student may now complete the two courses in six years. Below is the report of the committee and the statute of the Senate. It is not clear from either the report or the statute just what subjects in the dental curriculum are considered medical subjects, and may be taken in the medical school. It would seem that a medical student may elect at the completion of his second year to take dentistry, while a dental student must elect at the beginning of his course to take medicine.

Report of the Committee on a Combined Course in Medicine and Dentistry.

To the Directors of the Royal College of Dental Surgeons:

Your committee have given this subject their most careful consideration, and now report that, in their judgment, such a course is both desirable and practicable.

In furtherance of this proposition your committee recommend:

1. That the combined course be in connection with the Medical Faculty of the University of Toronto.

2. That the combined course be open to regularly matriculated and indentured students of dentistry, who, at the commencement of their college course, elect to pursue it, and become undergraduates in the Faculty of Medicine of the University.

3. That the combined course extend over six years.

4. That the studies in dentistry and medicine be taken concurrently, during the four sessions covered by the indentures of the students in dentistry.

5. That during these four sessions the student shall complete in the school of dentistry all the work prescribed by the curriculum in dentistry, including dental materia medica and therapeutics, which is not included in the full medical course, and in the medical school all the work of the first and second years of the medical course.

6. That the third and fourth years of the medical course be taken subsequently to the completion of the dental work of the course in dentistry.

7. That during the first four years, the student shall pass, at the close of each session, the regular examination of the Royal College of Dental Surgeons, in all subjects not included in the medical course.

8. That upon furnishing satisfactory evidence of having successfully completed the whole work of the medical course the student shall be credited on his dental course as having passed all the examinations required by the curriculum in dentistry, which have been taken in the medical course, and shall receive a certificate of license to practise dentistry in Ontario,

9 That the studies of the first and second years in medicine be taken by the student of dentistry as follows:—

In his first year—Elementary Biology and Physiology, Practical Biology, Physics, and Practical Physics.

In his second year—Chemistry, Practical Chemistry, Histology, Materia Medica.

In his third year—Physiology and demonstrations, Practical Histology and Physiology, Practical Anatomy.

In his fourth year—Physiology, Chemistry and Practical Chemistry, Descriptive and Practical Anatomy, Embryology.

Subject to such re-arrangement as the time-tables of the two schools may necessitate.

10. That the Senate of the University be asked to permit students taking the combined course to spread the work of the first and second years in medicine over four years, and to admit such students to the regular examinations on the subjects of the first and second years in medicine, as they may have completed them in the Medical School.

11. That students of medicine, who have completed the work of the first and second years in medicine, may, on matriculation in the Royal College of Dental Surgeons, and signing indentures as student of dentistry, take the dental work of the curriculum in dentistry, during four sessions, concurrently with the completion

of the work of the medical course in the Medical School, and on the successful completion of the work of both courses receive a certificate of license to practise dentistry in Ontario.

All of which is respectfully submitted.

J. F. Adams,
A. Primrose,
R. J. Reade,
J. B. Willmott,
Committee.

Toronto, April 29th, 1904.

Moved by Clark, seconded by Adams,—That the report be received and adopted. Carried.

The Statute of the Senate of the University of Toronto.

1. That students who are matriculants in the Faculty of Medicine, and in the Department of Dentistry, may take a concurrent course in medicine and dentistry, which will extend over six years.

2. Students taking this course will pass the regular University examinations, in the subjects of the medical curriculum, from year to year as they are completed in the Medical Faculty, and in the final dental subjects of the curriculum in dentistry, from year to year, as they are completed in the Royal College of Dental Surgeons.

3. Students taking this concurrent course, who have fulfilled all the requirements for the degree of M.B., and who have successfully passed the examination in the dental subjects of the curriculum in dentistry, including Dental Materia Medica and Therapeutics, shall receive the degree of D.D.S.

THE EDUCATION OF CANADIAN DENTAL STUDENTS IN THE UNITED STATES.

As it has always been in the past, and as it is to-day, there are more Canadian dental students obtaining their dental education in the United States than in Canada. This should not be. Is it not time that the Canadian profession, and especially the colleges, should make a searching investigation as to the cause of this great loss of both money and young men to our country? There is more than one dental school in the United States largely maintained by Canadian students. Why should we build up and maintain educational institutions in a foreign country?

There is hope that something can be done that will show that we are alive to the best interests of the profession and to our country. There are many factors which cause this annual migration, and it is a fit subject for our provincial boards or the Canadian Dental Council to appoint a commission to investigate. Our colleges should look into the matter, because they are vitally interested. It does not seem to be to their credit, and yet they may not be to blame, and the responsibility should be placed where it belongs. While there are many causes which we do not care to enter into just here, yet we may suggest a practical remedy in Ontario. The four years, as against three in the United States, the matriculation, and the pupilage enter into the case. In medicine a student may matriculate any time before he writes his primary examination, but in dentistry he must matriculate before he can indenture or attend college. Could not the same liberality be granted dental students by allowing them to attend one session without matriculation? this will keep at home all those who have failed at a matriculation examination, because they can still have their time count in dentistry, and have an opportunity to prepare for matriculation the next year. To still further make the way easy, do not require indentures the first year. These young men will have time to prepare for their matriculation, and those who have it may have a good holiday or earn some money during the interim between the first and second sessions of college. There can be no objection raised to this arrangement, and it will keep annually, at least, ten to twenty men in our country. The profession should take some interest in this matter. Our country is opening up; the population is increasing fully two hundred thousand annually, and the dental schools of Canada, after this year, will be sending out about forty graduates to supply this increase in population, and the loss by death and retirement. The supply is not equal to the demand, and the result is we are being supplied from the United States by some of our own young men who went there for an education, and by adventurers, who under the present conditions can make a strong appeal to the Legislatures for admission.

CANDIDATES FOR THE LEGISLATURE.

There have been dentists members of the House of Commons, but up to the present no dentist has held a seat in the Ontario Legislature. Several times dentists have been candidates, but always unsuccessful. Dr. Fell, of Manitoulin; Dr. Harvey, of East Simcoe, and Dr. McGuire have been candidates. Other dentists have been prominent in politics and on the hustings. It was confidently expected by those who knew his genial qualities, and his abilities as a platform speaker, that Dr. A. W. Thornton, of Chatham, would be a candidate in one of the Kents; but for some reason his name was withdrawn from the convention. Another dentist prominent in politics is Dr. S. Moyer, of Galt, who has refused to be a candidate on more than one occasion. So far it remains for Dr. M. McKay, M.A., of Pembroke, to represent the profession among the candidates for Legislative honors. North Renfrew is always a doubtful constituency. If there is a Liberal in the riding who can win Dr. McKay is that man. He is a finished speaker and a man of marked ability.

ONTARIO DENTAL SOCIETY MEETING IN MARCH.

At a meeting of the Programme Committee of the Ontario Dental Society, held in November, it was thought for several reasons desirable to hold the next meeting at the time of the Horse Show in Toronto, and the closing exercises of the Royal College of Dental Surgeons. This date would insure a single fare rate on the railways, and avoid any possibility of interference by storms, as occurred last year; it would also give an opportunity for the young men graduating to become members of the Society and create in them a desire for society work. The Programme Committee communicated with the Executive, and being guided by the replies it received, it was decided to hold the meeting in March.

This year the programme will be of somewhat different character from former years. There will be two half days given up to clinics. The intention is to present many operations of like character, following the subjects of the papers presented. Dr. C. N. Johnson has consented to be one of the clinicians. The essay programme will consist of the following subjects: "The Phenomenon of Susceptibility and Immunity to Dental Caries," "Ethical Relations," "Preparation of Cavities for Filling," "Prophylactic Treatment of Dental Caries," "Management of Sensitive Dentine." With Dr. Johnson present and the foregoing programme, there will be no doubt of there being the largest meeting ever held.

AN INVITATION TO CANADIANS.

At a meeting of the Representative Board of the British Dental Association, held on October 20th, it was resolved that an invitation be extended to the members of the Canadian Dental Association to attend the annual meeting of the British Dental Association, to be held at Southport, on Saturday, May 20th; Monday, 22nd; Tuesday, 23rd, 1905.

Editorial Notes

THE Elgin Dental Society is going to pursue the study of gold filling during all its meetings during this winter.

AFTER eleven months' illness from tuberculosis, Ladislas Tremblay, L.D.S., D.D.S., of Chicoutimi, Que., died in his twenty-ninth year, on November 25th, 1904.

IN a short, clear, pointed article in the last number of the *Dental Review*, Dr. Wright, of Cincinnati, points out the tendency of modern dentistry to be dental orthopediæ, or orthodontia, prophylaxis and the study of the esthetic, as illustrated chiefly in porcelain.

Review

Orthodontia and Orthopedia of the Face. By VICTOR HUGO JACKSON, M.D., D.D.S., Member of the National Dental Association; Professor of Orthodontia in the Dental Department of the University of Buffalo; Fellow of the New York Academy of Medicine; Member of the American Medical Association. With seven hundred and sixty original illustrations. Published by J. B. Lippincott Company, Philadelphia and London.

Only a few years ago there was not an up-to-date book on orthodontia. In fact, Farrar, Guilford, and Angle were the only works in print. These were not revised as often as they should have been, which, in a measure, accounts for so many recent publications. The subject is now becoming recognized of such importance to the general practitioner that there is a large sale for works on the subject. Up to the present time there has not been a book written on the general subject. Each author is simply describing his methods, and most of them with an idea of selling their appliances. The books are really advertisements for the sale of appliances. The character of the present work is a necessity under the present conditions of knowledge of the subject. Practice precedes principles; so in this subject, after a time, deductions will be made from the numberless methods which are being published. The book under discussion will go a long way to lay the foundation of correct principles and practice of orthodontia. The author, in his preface, does not present the work as anything more than a detailed description of his methods, which have been so eminently successful in his practice. Without any doubt the present volume fulfils all that is claimed for it. It is carefully written and profusely illustrated. The descriptions of appliances are clear and accurate. It is a one-man book, and consequently gives the feeling and impulse and the enthusiasm of its author to the reader as a compilation cannot do. The Jackson methods have been before the profession for a number of years, and their value recognized. There are many very neat devices described. In fact, the whole book is a description of methods. Every possible variety of irregularity is treated; the appliance devised and applied. The chapter on retention is specially good. The book has 500 pages and sells for $5.00.

Correspondence

To the Electors of District No. 2:-

I wish here and now to publicly thank all those who supported me in the recent election for Directors of the R.C.D.S. You treated me nobly.

To those who supported another candidate, I am constrained to say that they were worthy of your support.

And to those who, for some reason, disenfranchised themselves, I must add that you denied yourself a privilege and failed in a duty.

The profession and the College should be of such interest to every practitioner that he be not indifferent to their management and welfare.

As representative for District No. 2, I desire to serve you most faithfully. I would, therefore, consider it a very personal favor if, during the winter and previous to the annual meeting of the Board next April, every elector in this district would consider it his duty to send me any suggestions relative to the upbuilding of our profession and our R.C.D.S. We wish our

College to attain to an international reputation, and our profession to be in a position to command the respect it deserves.

There are many subjects that should be considered at the next meeting, such as indentures, Dominion Registration, when must a student's matriculation be completed, and many others, and I cannot hope to represent you fairly and well unless you will present your views to me.

Kindly make this a personal matter.

Yours obediently,

G. M. HERMISTON.

Picton, Dec. 19th, 1904.

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

TORONTO, Nov. 15th, 1904.

To the Editor of DOMINION DENTAL JOURNAL:

DEAR SIR,—In October, 1903, the by-laws of the Royal College of Dental Surgeons were revised, amended, and consolidated. In December a copy of the Dental Act and by-laws, in pamphlet form, was mailed to each licentiate in practice in Ontario, and a copy handed to each student in attendance at College.

I am now instructed by the directors of the R.C.D.S. to specially call your attention to by-law 10, entitled, "For the Better Government of the Profession of Dentistry." By looking up the by-law, you will observe that it provides for the suspension or cancellation of the certificate of license of any L.D.S., who has been proven guilty of "Professional misconduct," or of "Conduct unbecoming a licentiate of dental surgery."

I am instructed to specially direct your attention to three somewhat prevalent forms of "Conduct unbecoming a licentiate of dental surgery," viz.: Employing unqualified assistants; making careless, and in not a few instances untrue, declarations in the matter of the pupilage of students; and unprofessional advertising.

The directors are very earnestly desirous that the members of the R.C.D.S. should show their respect for their profession and their ambition for its elevation and recognition, by abstaining from unprofessional conduct of any kind. A few offenders bring the whole dental profession, in the estimation of other professional men and of the general public, down to their level; that is to say, the profession of dentistry, as to its ethical and professional standing, is judged, not by the conduct of the ethical, but by that of the unethical practitioner.

The directors of the R.C.D.S. requested their solicitor to very carefully draw the by-law, so as to keep within the authority given them by the Dental Act, with the intention of enforcing it, if necessary, in order to maintain a reasonable measure of professional ethics in the members of the R.C.D.S.

In the first two classes of offences named, the ethical line is very readily drawn. No ethical practitioner will employ an unqualified assistant, and thus be a principal party to his violating the law. It is hoped that simply calling attention to this matter will be sufficient to cure the evil. As to the second, it is very clear that all declarations should be strictly accurate. They have the same force as an oath, and if untrue involve a very serious crime. Regarding the third count, there may be some difference of opinion as to what is an unprofessional advertisement. On this point there is a very general consensus of opinion that all advertising of fees for services, and especially a reduction of ordinary fees to secure patronage on account of "cheapness" is grossly unprofessional. As a reasonable standard, it may be observed that any class of advertisements in the public press, which would be considered objectionable if inserted by a respectable physician, would be equally objectionable if inserted by a dentist.

Since the promulgation of the by-law, formal complaint has been made against three practitioners for advertising fees in the public press. On being notified thereof, and their attention called to the impropriety, they promptly withdrew the objectionable advertisements.

It is to be regretted that these were not the only offenders. The directors hope that others who are thus advertising will see that the whole profession is suffering by their misconduct, and will, without waiting for formal complaint, bring their professional cards within the ethical limits.

I may add that whenever complaint is made the directors will not shrink from enforcing the law, though they would very much prefer that from his own sense of what is right and proper each licentiate would conduct his practice on strictly professional and ethical lines. Yours very truly,

J. B. WILLMOTT,
Secretary R.C.D.S.

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